SAND2016-7705C

Conceptualizing a WMD Free Zone in the Middle East: A Quantitative Approach

Presented by Amir Mohagheghi

Contributions by Ben Bonin, Eric Wallace, and Scholars from the Middle East

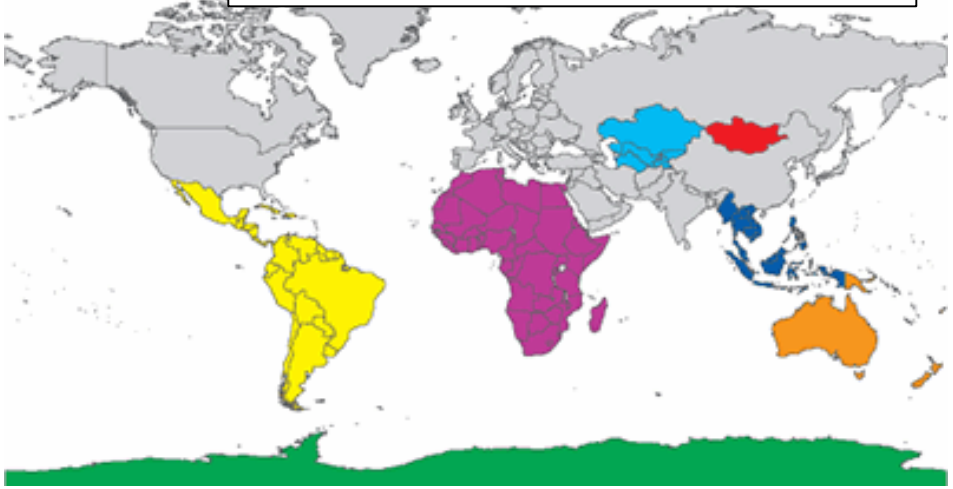
August 2016

Sandia National Laboratories

Nuclear-Weapon-Free-Zones (NWFZs)

- **NPT Article VII:** "Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories."
- **Can include the prohibition on** the development (or assistance in research), manufacture, stockpiling, acquisition, possession, or control of any nuclear explosive device within the zone of application by any contracting party.
- **Provides Negative Security Assurance** – A pledge from the five NPT nuclear-weapon states (China, France, Russia, United Kingdom, and United States) not to use or threaten to use nuclear weapons against members of the zones.
- **Current Nuclear Weapon Free Zones:**
  - Latin America and the Caribbean (1967)
  - South Pacific (1985)
  - Southeast Asia (1995)
  - Africa (1996)
  - Central Asia (2006)
  - Antarctica (1961)
  - Space (1967)
  - Mongolia (1992)
- **Future NWFZ?**
  - Middle East
  - Northeast Asia/Korean Peninsula

Map indicates locations of NWFZs



Nuclear Weapon Free Zone – Current Example

Treaty of Pelindaba

(African Nuclear-Weapon-Free-Zone Treaty)

- Opened for signature in 1996 – Entered into force in 2009
- All 53 member states of the African Union (AU) are signatories
- Provisions of the Treaty
  - Renunciation of nuclear explosive devices
  - Prevention of the stationing of nuclear devices*
  - Prohibition of the testing of nuclear explosive devices
  - Declaration, dismantling, destruction or conversion of nuclear explosive devices and the facilities for their manufacture
  - Prohibition of the dumping of radioactive waste*
  - Promotion on peaceful nuclear activities and verification of their peaceful uses
  - Physical protection of nuclear materials and facilities and the prohibition of armed attacks on nuclear installations*
  - Establishment of the African Commission on Nuclear Energy as a mechanism for compliance
  - Reporting and exchange of information on nuclear activities

* Indicates supplementary measures to the NPT

NWFZ (WMDFZ) in the Middle East – A work in progress

	NWFZ in the Middle East (ME) - Timeline
1974	The United Nations General Assembly (UNGA) approves resolution endorsing the goal of establishing a NWFZ in the Middle East following a proposal by Iran.
1980	Annual UN resolution on NWFZ in Middle East was adopted by consensus after Israel voted in favor of the resolution.
1990	Egypt proposal to establish a Weapons of Mass Destruction Free Zone (WMDFZ) in the Middle East.
1991	The UN Security Council Resolution 687 endorses goal of establishing a WMDFZ in the Middle East.
1992-1995	Six plenary sessions of the **Arms Control and Regional Security (ACRS)** in the Middle East working group under the 1992 Madrid's peace process.
1995	**The NPT Review Conference adopts a Resolution on the Middle East calling on states to take practical steps to make progress in the establishment of WMDFZ in the region. Member agreement on resolution was seen as key to securing the indefinite extension of the NPT.**
2010	The NPT Review Conference endorses five practical steps to make progress towards the goal of establishing a WMDFZ in the Middle East. Action steps adopted include convening a regional conference to discuss the issue in 2012 and appointing a WMDFZ Facilitator.
2015	**No consensus reached on the draft final document of the 2015 NPT Review Conference due to disagreement on the zone issue.**

ACRS Legacy: Regional Dialog

- Regional security dialog facilitated by the UCLA Center for Middle East Development
- Working group on Arms Control, Security, and Technology – established 2003
  - Focus on the role of S&T in addressing Arms Control, Nonproliferation, and Regional Security Issues
- Task force on the technical dimensions for establishing a Middle East WMDFZ – established 2009
  - Initial focus on the BWFZ dimension

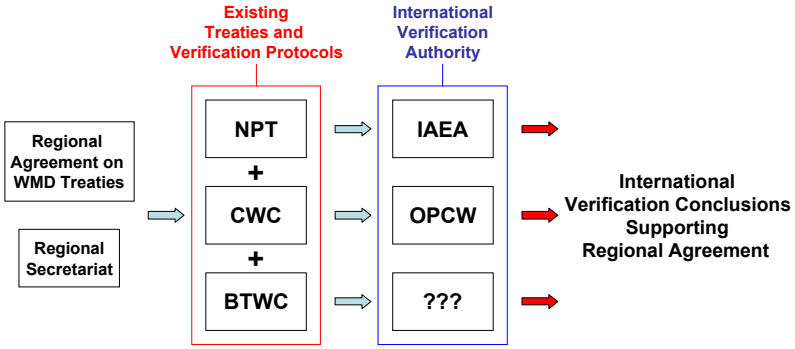
Middle East WMDFZ Task Force

- Task Force has periodically reviewed conceptual “models” of a regional free zone

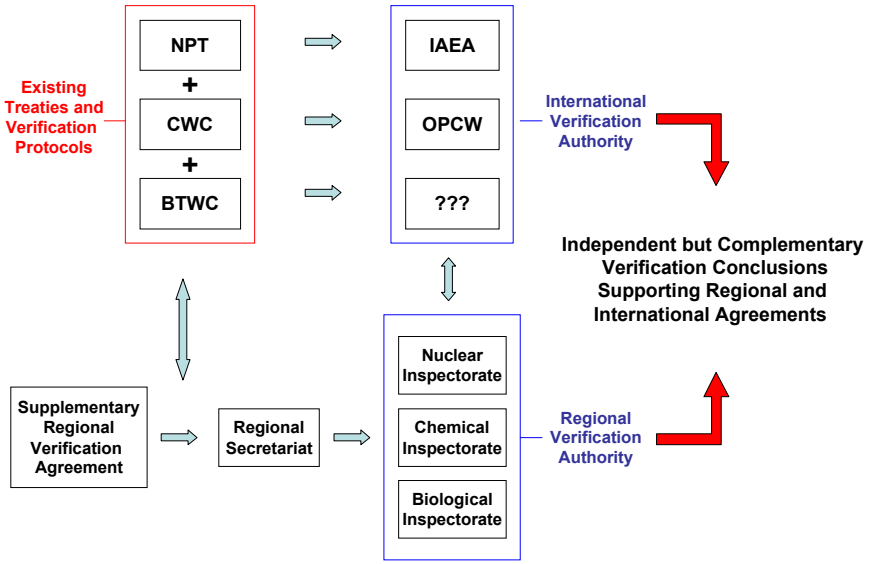
- Value of models:
  - Make abstract ideas and concepts more tangible
  - Inform and structure discussions
  - Understand how discussions and outputs relate to the “big picture”
  - Allow for more systematic identification of topics and focus areas

- Important considerations:
  - No model is perfect; reality is far more complex
  - Models are intended to inform a discussion on policy; they are not necessarily intended to shape or drive policy
  - Models are improved by a diversity of input and perspectives

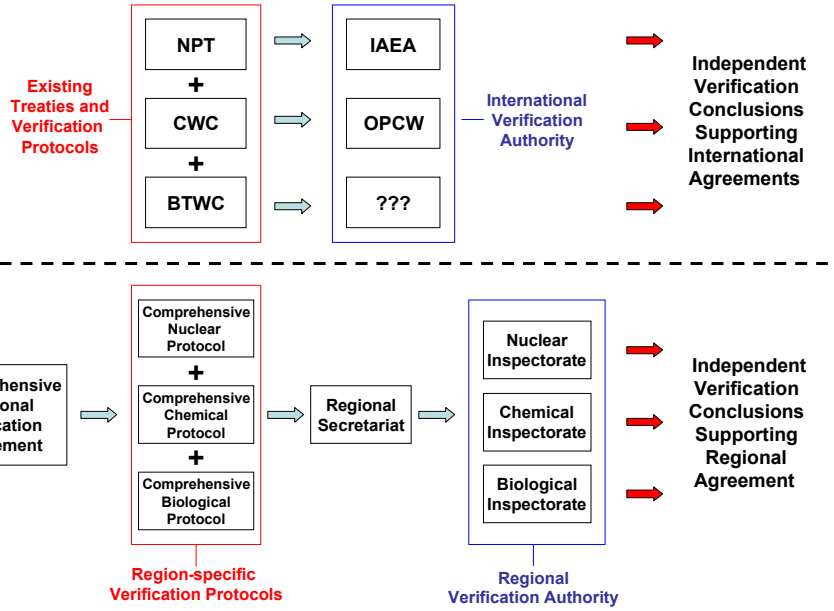
Model 1: Agreement on Existing Treat Regimes

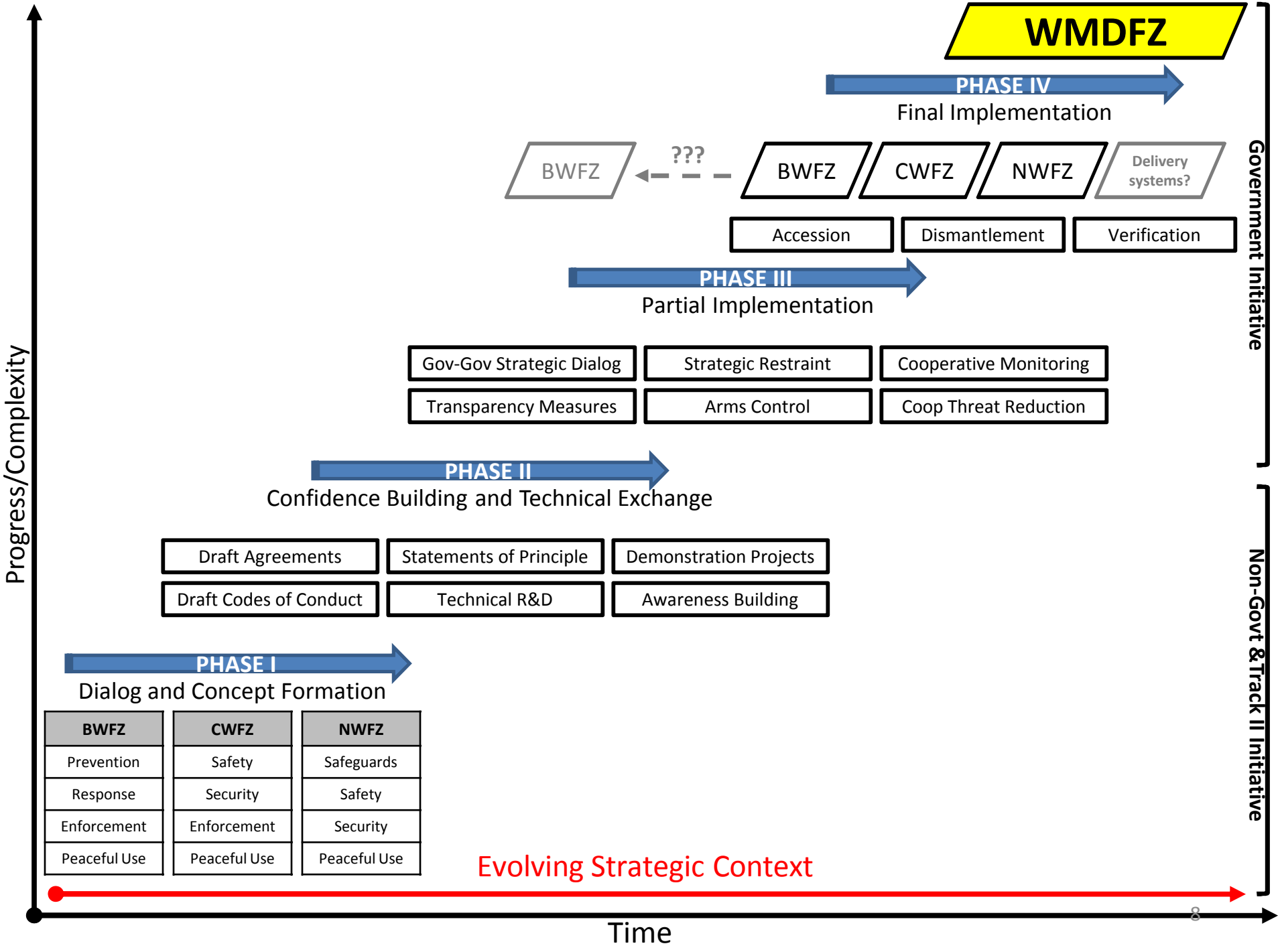


Model 2: Parallel but Complementary Regimes



Model 3: Parallel and Independent Regimes




WMDFZ
PHASE IV
Final Implementation
BWFZ
???
BWFZ
CWFZ
NWFZ
Delivery systems?
Accession
Dismantlement
Verification
PHASE III
Partial Implementation
Gov-Gov Strategic Dialog
Strategic Restraint
Cooperative Monitoring
Transparency Measures
Arms Control
Coop Threat Reduction
PHASE II
Confidence Building and Technical Exchange
Draft Agreements
Statements of Principle
Demonstration Projects
Draft Codes of Conduct
Technical R&D
Awareness Building
PHASE I
Dialog and Concept Formation
BWFZ
CWFZ
NWFZ
Prevention
Response
Enforcement
Peaceful Use
Safety
Security
Enforcement
Peaceful Use
Safeguards
Safety
Security
Peaceful Use
Evolving Strategic Context
Progress/Complexity
Time
Government Initiative
Non-Govt &Track II Initiative

A Quantitative Model

- Model incorporates key technical and political parameters of relevance to a potential WMD free zone in the Middle East
- Designed to show progress of regional convergence toward political and technical conditions facilitating implementation of a free zone
- Not intended to suggest the exact political or technical requirements for a free zone
- Not intended as an individual assessment of countries

Data

- Political parameters (20 data inputs)
  - Peace process
  - Diplomatic relationships
  - Treaty status
  - Conventional military balance
- Technical parameters (18 data inputs)
  - Relevant technical competencies in chemical, biological, and nuclear sciences
  - Bureaucratic and legislative capacities
  - Experience with implementation of arms control and confidence building measures
  - National technical means for verification and monitoring
- Publicly available data sources
  - World Bank
  - United Nations
  - IAEA/OPCW/CTBTO
  - Stockholm International Peace Research Institute (SIPRI)
  - UN 1540 database

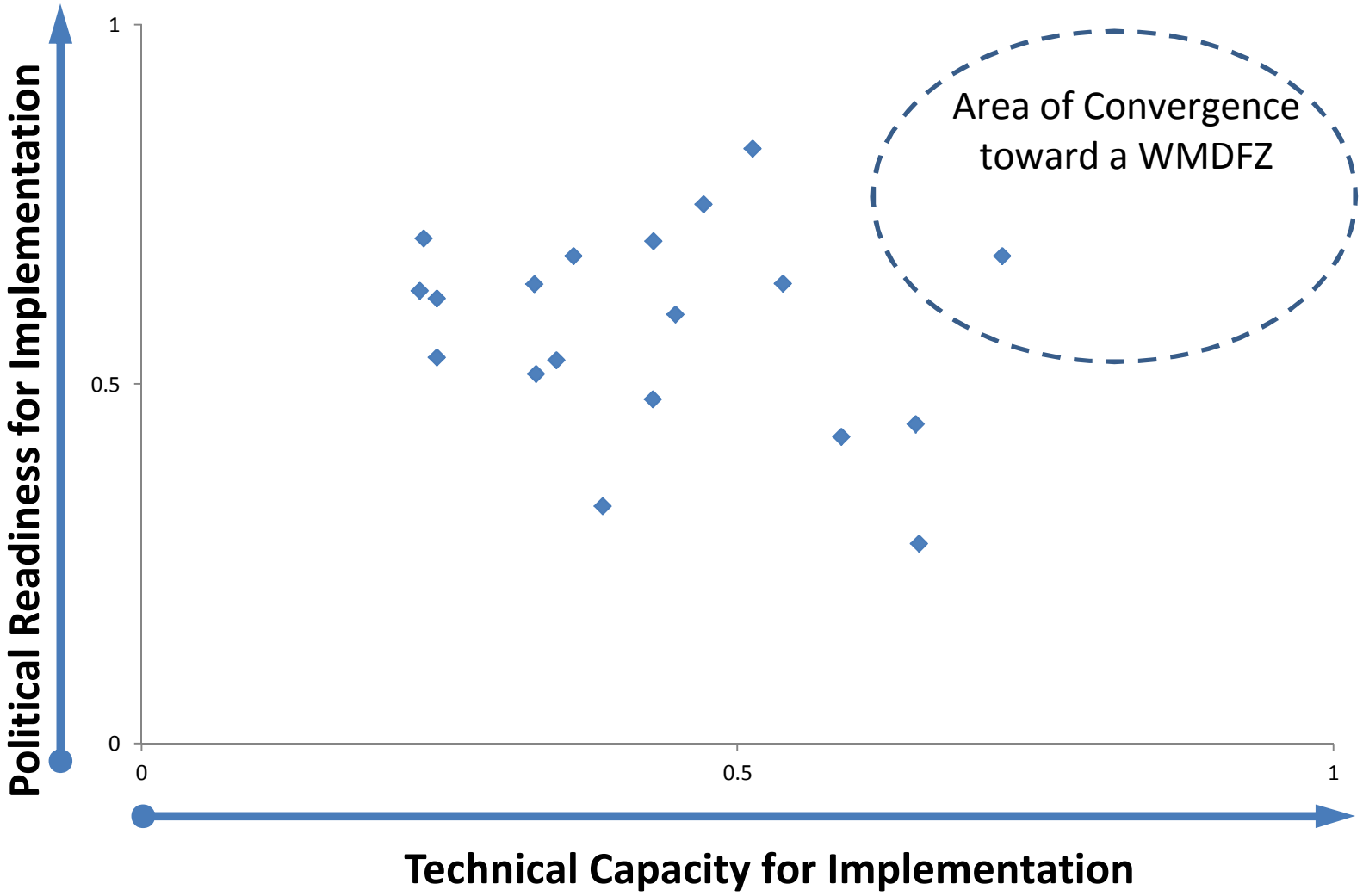
Calculating Country "Scores"

- **Each country receives a normalized 0-1 score on each data point**
  - 0 = no contribution to free zone
  - 1 = maximum contribution to free zone

- **Example: Existence of government authority for regulation of dangerous biological agents (data from UN 1540 database)**
  - 0.0 = No authority
  - 0.5 = Authority for licensing and regulation of biological agents handled by non-bio specific government agency
  - 1.0 = Existence of dedicated government authority for licensing and regulation of biological agents

- Individual data scores are summed and averaged to generate overall political and technical scores

Preliminary Regional Readiness Status for a WMDFZ



Preliminary Observations

- **Significant variation on technical capacity for implementing a free zone; sources of variation include:**
  - Bureaucratic and legislative capacities
  - Practical experience with arms control, implementation of confidence building measures, and technical monitoring

- **A focus on political factors alone overlooks significant gaps and inconsistencies in the technical capacity to implement a zone**

- **Many of these capacities are independently beneficial, regardless of whether or not a zone exists**

Possible Next Steps

- **Refine model with better and more comprehensive data**

- **Apply more sophisticated analytical tools**
  - Expert elicitation process to determine weights
  - Multiple Objective Decision Analysis (MODA) framework

- **Solicit inputs from the region on data points – lack of complete or reliable data in many key technical areas**
  - Competencies in relevant technical fields
  - Awareness and competencies in arms control
  - Existence of relevant domestic institutions

- **Examine interdependence between the political and technical parameters**

A Proposal: Voluntary Measures

- **Establish a track-one mechanism through which countries voluntarily agree to adopt a subset of the political and technical parameters**
  - the model provides a framework for relevant measures
  - regional scholars advise a separate process from NPT

- **Submit annual reports concerning progress towards these measures**
  - the reports used to update the model and map the region's progress

- **Establish a parallel track-two working group**
  - address and explore options for underlying political and technical issues identified through the official channel

Questions and Discussion