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SUBREGIONAL CAPACITY-BUILDING WORKSHOP TO
ADDRESS INVASIVE ALIEN SPECIES AND TO ACHIEVE
AICHI BIODIVERSITY TARGET 9 IN THE ARAB REGION
Dubai, United Arab Emirates, 11-14 February 2013

REPORT OF THE SUBREGIONAL CAPACITY-BUILDING WORKSHOP TO ADDRESS INVASIVE ALIEN SPECIES AND TO ACHIEVE AICHI BIODIVERSITY TARGET 9 IN THE ARAB REGION

INTRODUCTION

1. At its tenth meeting, the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) adopted the Strategic Plan for Biodiversity 2011-2020 with its 20 Aichi Biodiversity Targets. Among the 20 global targets, Target 9 states: “By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment” (decision X/2). In addition, the Executive Secretary was further requested to promote transboundary cooperation on the management of invasive alien species, in particular in river basins (paragraph 9(b) of decision X/38).
2. Accordingly, the Secretariat of the Convention on Biological Diversity organized a workshop in collaboration with the Ministry of Environment and Water, the Government of the United Arab Emirates (UAE), the United Nations Environment Programme (UNEP) Regional Office for West Asia (ROWA) and the Secretariat of the International Plant Protection Convention (IPPC), with the generous financial support of the Government of Japan. The workshop, entitled “Subregional Capacity-building Workshop to Address Invasive Alien Species and to Achieve Aichi Biodiversity Target 9 in the Arab Region”, was held on 11-14 February 2013 in Dubai.
3. This workshop considered how to develop or update national strategies and action plans to address invasive species as part of the updated national biodiversity strategies and action plans (NBSAPs), taking into account decisions of the Conference of the Parties and other elements of the international regulatory framework relevant to invasive alien species, such as the IPPC.
4. During the 3 days of workshop the group composed of: (i) the CBD National Focal Points; (ii) the National Plant Protection Organizations (NPPOs) of the region; and (iii) experts in biological invasion, exchanged information on invasive alien species management. The discussion covered: (i) successful measures in addressing invasive alien species; (ii) obstacles/challenges to addressing invasive alien species; and (iii) lessons learned in prevention, control and management of the risks associated with alien (non-native) species. Taking into account the information exchanged the participants discussed possible

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national/regional actions needed in developing/updating national invasive species strategies and action plans (decision VI/23*), as a part of national biodiversity strategies and action plans in the Arab region.

5. The workshop also provided an opportunity for each CBD national authority to communicate and enhance collaboration and cooperation with each country's national/regional plant protection organization, as well as the regional plant protection organization to apply phytosanitary measures to prevent and minimize the risks associated with introduction of alien species.

6. The outputs of this workshop were:

- (a) The elements to be considered as invasive alien species strategies at the regional level;
- (b) The elements to be included in the national invasive species strategies and action plans;
- (c) A preliminary list of invasive alien species considered as regional priorities to achieve Aichi Biodiversity Target 9.

7. This report provides an overview of the workshop discussions, the conclusions of the meeting, and the next steps going forward. Annex I to this report presents the summary of national action plans and identified actors to be considered in the process of developing/updating NBSAPs.

ITEM 1. OPENING OF THE WORKSHOP

8. The workshop started on Monday, 11 February 2013 at 9 a.m. at the City Seasons Hotel, 8th Street Port Said District, opposite Deira City Centre P.O. Box 56421, Dubai.

9. On behalf of the Minister of Environment and Water of the Government of the United Arab Emirates, Mr Mohammed Obai Al-Zaabi, Acting Assistant Undersecretary opened the workshop. He welcomed participants and stated that the Government of the UAE considered biodiversity as an important value for every citizen. He highlighted that the issue of invasive alien species was an urgent matter to address in the region as well as climate change and thanked the organizers and the Government of Japan for supporting this important workshop.

10. Speaking on behalf of the Executive Director of the UNEP, Ms. Diane Klaimi at the UNEP Regional Office for West Asia thanked the Government of the UAE, the League of Arab States and Secretariats of the IPPC and CBD. She said that the workshop to address invasive alien species in the Arab region had been longed by numbers of experts in the room and the League of Arab States. She encouraged participants to have fruitful discussion to tackle invasive alien species which were recognized as a major threat to biodiversity.

11. Mr. Craig Fedchock, Coordinator of the IPPC Secretariat welcomed participants and stressed the importance of cross-sectoral collaboration to address the issue of invasive alien species. He highlighted that this workshop was a good opportunity for national coordination between the officials in different ministries. He also stressed that NPPOs and regional plant protection organizations carried important roles to implement phytosanitary measures which largely covered the management of species that were recognized as invasive alien species in the environment sector.

* One representative entered a formal objection during the process leading to the adoption of this decision and underlined that he did not believe that the Conference of the Parties could legitimately adopt a motion or a text with a formal objection in place. A few representatives expressed reservations regarding the procedure leading to the adoption of this decision (see UNEP/CBD/COP/6/20, paras. 294-324).

12. Speaking on behalf of the Executive Secretary, Ms. Junko Shimura, Programme Officer of the Secretariat of the Convention on Biological Diversity (SCBD) addressed the Aichi Biodiversity Target 9 and stressed the importance of inter-sectoral collaboration, especially between the national authorities to the CBD and the IPPC to manage and control the introduction of alien species, of which implementation was necessary for countries to achieve Target 9. She thanked the Government of the UAE for hosting this workshop and Japan for its financial contribution to enable all participants to join. She encouraged the participants in the Arab region to become champions at achieving Target 9.

13. Ms. Nermin Wafa, Head of programme & Activity Division of the League of Arab States (LAS) said that the LAS had supported the activities to reduce the risks associated with the introduction of invasive alien species in the Arab region through its regional coordination.

14. Mr. Faisal Awawdeh, Regional Coordinator of Arabian Peninsula Regional Programme from International Center for Agricultural Research in the Dry Areas (ICARDA) expressed his gratitude to the Government of the UAE and the organizers and introduced their activities related to invasive alien species in the region.

15. Mr. Mohamed Reda Ali Fishar presented on the history of engagement of the LAS to the previous meetings related to invasive alien species and the NBSAP workshop held in Beirut, from 2 to 7 May 2011. He also provided information on known invasive alien species in the region that were found in Global Invasive Species Database.

ITEM 3. SUBSTANTIVE MATTERS

3.1. Identification of successes and challenges at the national level

16. The workshop facilitator, Ms. Diane Klaimi (UNEP-ROWA) briefly described the proposed organization of work (<http://www.cbd.int/doc/meetings/ais/wscbias-ar-01/official/wscbias-ar-01-01-add1-en.pdf>).

17. Ms. Junko Shimura (CBD Secretariat) provided a presentation on the Convention's initiatives relevant to invasive alien species, the Strategic Plan for Biodiversity 2011-2020 and Aichi Biodiversity Target 9. She showed some cases of implementation of sanitary and phytosanitary measures in a few of CBD Parties. Based on the statistics of non-native mammal species established in Europe and New Zealand, she emphasised that Target 9 was achievable if strong national policy on invasive species and measures were in place.

18. The National Plant Protection Organizations (NPPO) of Egypt, Jordan, Lebanon, Morocco, Oman, Sudan, Tunisia, Yemen and the Palestinian Authority presented their experiences and challenges to address invasive alien species /plant pests at the national level.

19. Most of the countries in the region had the organizations designated as the National Plant Protection Organization. The existing legislation covered some quarantine pests for security of agricultural production, however, some invasive alien species were not considered as quarantine pests nor regulated pests in the region. Most of NPPOs stated that the ability to identify species in the region was limited. Information on both plant pests and invasive alien species known for this region was difficult to find or not easy to access for the public in the region. The workshop participants felt that the deficit of information made it difficult to conduct early detection and rapid response to invasive alien species. The lack of experts who could identify invasive alien species and the capacity, including the infrastructure of the NPPOs to support environmental related matters was not always adequate. However, in principle, collaboration with environmental sector was welcomed by the NPPOs.

20. After the presentations by the NPPOs, Mr. Craig Fedchock (IPPC Secretariat) provided a presentation on the view of IPPC on invasive alien species. He explained briefly the phytosanitary measures to protect plant health and the role of the IPPC as one of the standard setting bodies recognized by the World Trade Organization's Agreement on Sanitary and Phytosanitary Measures. He stressed that large number of invasive alien species, but not all of them,¹ could be considered as plant pests, and the expertise under the IPPC as well as the Regional and National Plant Protection Organizations could be useful for the environmental sector to manage and control invasive alien species with appropriate collaboration.

3.2. *The issue of invasive alien species in the region*

21. Mr. Arne Witt (CABI Africa) made a presentation entitled "Introduction to invasive alien species (IAS)". He shared his experience in Africa and Asia and stressed that management of invasive alien species was not a simple task for any country and stressed the importance of cost-effective planning and engagement of relevant biodiversity stakeholders, such as farmers and local communities. He also stressed that scientific information was critical to addressing invasive alien species and introduced the Global Invasive Alien Species Information Partnership which was launched at the eleventh meeting of the Conference of the Parties in October 2012.

22. Mr. Konstantinos Tsiamis of the HCMR made a presentation on "Marine invasives and their pathways". He presented cases of biological invasions in the Mediterranean and its impact on the aquatic environment. Serious concerns were expressed regarding the pathways of introduction of alien species which included: (i) ballast water and hull fouling of the ships moving through the Suez canal; (ii) increased tourism; and (iii) release of aquarium species. He also showed a successful case of eradication of *Caulerpa taxifolia* in California and stressed the importance of early detection and rapid response. Collaboration with citizen scientists was highlighted to increase public awareness. A best practice in European countries was also mentioned in his presentation and he stressed that effective management of aquatic invasive alien species was carried out with participation of citizen scientists.

23. The CBD National Focal Points of Bahrain, Comoros, Egypt, Iraq, Jordan, Lebanon, Morocco, Oman, Saudi Arabia, Sudan, Tunisia, Yemen as well the Palestinian authority presented the status of national legislation relevant to invasive alien species and their experiences and challenges to address invasive alien species. Most of the countries had not yet developed national invasive species strategies and action plans. Any specific regulations targeted on invasive alien species had not been enacted nor developed in the region although there may be some in existence under the purview of the National Plant Protection Organizations.

24. The participants discussed the strengths and challenges for the region in addressing the issue of invasive alien species. Briefly, the participants recognized some problematic species that were common in the region, such as *Prosopis juliflora*, *Solanum eleagnifolium*, *Eichhornia crassipes* etc. and strong needs and willingness to collaborate at the regional level was reaffirmed. The challenges included inadequate engagement of scientific institutions in identification and monitoring of invasive alien species, although ICARDA, the Arab Center for the Study of Arid Zones and Dry Lands (ACSAD) and the Arab Organization for Agricultural Development (AOAD) had initiated work related to invasive alien species to collect records of biological invasions in the region. Inadequate funding to continue or establish scientific research on biological invasions in both the terrestrial and aquatic environment were stressed by many participants. Lack of accessible data on biological invasions which had occurred in the region was pointed out as major limiting factor for conducting risk assessments, risk management as well as

¹ The COP recognized that those alien species harmful strictly for animals were not covered by the IPPC and welcomed the guidelines on assessing risk of non-native animals of the World Organisation for Animal Health (see paragraph 3 of decision IX/4A, paragraphs 11 and 12 of decision XI/28)

increasing public awareness on invasive alien species. There was some confusion among participants regarding terminology (e.g. invasive alien species, plant pests, alien species, naturalized species, etc.).

25. Ms. Junko Shimura made a presentation on “Addressing the issue of Invasive Alien Species to Achieve Aichi Biodiversity Target 9”. She explained the definition of invasive alien species under the CBD and mentioned that the IPPC’s ISPM No.5 indicated that plant pests recognized under the IPPC had covered the species that impact on the environment such as invasive alien species. She also described the Strategic Plan for Biodiversity 2011-2020 adopted by the COP-10 in 2010, and the Aichi Biodiversity Targets and in particular, Target 9 (invasive alien species). She briefly mentioned some basic information on the existing international standards and guidance relevant to invasive alien species, in addition to the IPPC’s standards and encouraged the participants to apply these standards to address invasive alien species at the national and regional levels (see <http://www.cbd.int/invasive/doc/cbd-invasive-species-strategies-en.pdf>).

26. Following the discussion on Target 9, participants decided to identify the invasive alien species that needed to be prioritized in the region. Three working groups (i) Northern Africa; (ii) Near East and; (iii) Gulf region were established and each working group discussed the topic for about one hour. Each group reported to the plenary with a suggested list of priority species in the terrestrial and aquatic environments. Taking into account the impact on the environment, risks of spread, feasibility of eradication, cost effectiveness etc, each working group selected 10 priority species. The following list was a result further elaborated by the participants which intended to be considered as a starting point for prioritization of species for the region.

Scientific names ²	Common names ³
Insects	
<i>Rhynchophorus ferrugineus</i> Herbst	Date palm weevil, Red palm weevil
<i>Bactrocera zonata</i> (Saunders, 1842)	Peach fruit fly
<i>Tuta absoluta</i> ⁴ <i>Scrobipalpa absoluta</i> Meyrick, 1917	Tomato borer, Tomato leafminer
Vertebrates	
<i>Corvus splendens</i> Vieillot, 1817	House crow
<i>Acridotheres tristis</i> (Linnaeus, 1766)	Common myna
<i>Pycnonotus cafer</i> (Linnaeus, 1766)	Red-vented bulbul
Plants	
<i>Salvinia molesta</i> Mitchell	Giant salvinia, Kariba weed
<i>Opuntia stricta</i> (Haw.) Haw.	Prickly pear cactus
<i>Ailanthus altissima</i> (Mill.) Swingle	Tree of heaven
Aquatic species	
<i>Siganus rivulatus</i> Forsskål & Niebuhr, 1775	Rabbit fish
<i>Gambusia holbrooki</i> Girard, 1859	Mosquito fish
<i>Cyprinus carpio</i> Linnaeus, 1758	Common carp

² Scientific names were referenced to Catalogue of Life 2013 Annual Checklist (<http://www.catalogueoflife.org/annual-checklist/>).

³ Common names were provided by the workshop participants as general terms for the species within the community. These common names are not necessarily representing the taxa in a strict sense in other communities or languages.

<i>Oreochromis mossambicus</i> (Peters, 1852)	Mozambique tilapia
<i>Lagocephalus sceleratus</i> (Gmelin, 1789)	Silver-cheeked toadfish, Pufferfish
<i>Rhopilema nomadica</i> Galil, Spannier & Ferguson, 1990	Nomad jellyfish
<i>Fistularia commersonii</i> Rüppell, 1838	Bluespotted cornetfish
<i>Pistia stratiotes</i> L.	Water lettuce
<i>Eichhornia crassipes</i> (Mart.) Solms	Common water hyacinth
<i>Caulerpa taxifolia</i> ⁴	Green sea palm
Dinoflagellata ⁵	Red tide

27. The participants felt that the workshop did not have sufficient participation of scientific experts and the workshop decided to treat this list as provisional. Further regional collaboration was suggested.

28. Mr. Mohamed Handaine (Association Confederation des Amazighes du sud Marocain) provided a presentation on participation of indigenous and local communities in the region to address invasive alien species. He introduced case-studies in the region and stressed the importance of awareness raising on invasive alien species for the community.

29. Mr. Mekki Chouibani (Near East Plant Protection Organization) provided a presentation on the role of regional plant protection organizations to address invasive alien species. He encouraged participants to engage in information exchange activities with the Near East Plant Protection Organization (NEPPO) and regional NPPOs to harmonize the activities of NPPOs. NEPPO was promoting communication between NPPO, CBD authorities and relevant stakeholders at the regional and national levels.

3.3. *Progress on updating national biodiversity strategies and action plans (NBSAPs)*

30. Participants highlighted the gaps of capacity in the region and they were taken to be included in regional strategies. The gaps to be filled in order to enable national level activities to address invasive alien species were identified as follows :

(a) Need for establishing coordination committee or mechanism to facilitate communication among the relevant ministries, agencies and relevant stakeholders to elaborate national strategy;

(b) Need for expertise to identify invasive alien species and conduct risk analysis;

(c) Lack of taxonomic capacity at the national level. This gap could be filled by facilitation of scientific research at the regional level or beyond.

(d) Need for setting up the region specific invasive alien species information system(s) in Arabic and other languages, as appropriate;

(e) Need of awareness-raising among all biodiversity stakeholders, particularly citizens.

31. Participants recognized that the national invasive species strategies and action plans would be considered as an opportunity for Parties to fill the gaps mentioned above, by 2020, to achieve Target 9.

⁴ These species are not registered in Catalogue of Life as of May 2013. The names were referred to CABI Invasive Species Compendium (<http://www.cabi.org/isc/>).

⁵ Taxonomic rank of this scientific name is phylum, in which those species causing algal bloom are included.

Participants then decided to produce national action plans to address the gaps identified, taking into account the existing capacity at each of the national level.

32. Many of the participants explained that the action plans to be produced through this workshop would provide a good element to be considered in the process of finalization of NBSAPs at the national level. Taking into account that the process of updating NBSAPs would continue, participants were encouraged to continue national level communication to promote the action plans after the workshop.

3.4. Discussion on elements of national invasive species strategy

33. Bilateral discussion between the CBD national focal points and the NPPOs took place to produce possible action plans. Suggestions were made to fill the action plans with timing of actions as well as possible budgets to ensure the elements in this exercise could be useful in the process of updating NBSAPs in every country.

34. After bilateral discussions, the following countries: Bahrain, Comoros, Egypt, Iraq, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Tunisia, United Arab Emirates, Yemen and the Palestinian Authority shared their output of the exercise in the plenary, regarding the following three points (i) a brief description of actions needed at the national level; (ii) quantification of the cost; and (iii) next steps. The output of each county is summarized in annex I to this document.

35. After the presentations, participants expressed their conclusive views on capacity-building to achieve Target 9. The followings are summary of the discussion:

(a) At the national level, management of invasive alien species could be conducted with measures to control those unwanted species such as agricultural pests and diseases. However, identification and further prioritization of invasive species was needed with biodiversity experts. This workshop provided an opportunity to initiate communication between CBD focal points and NPPOs at the national and regional levels. It was important to continue these kind of events in the region;

(b) Information on invasive species in the Arab region developed by the experts within the region was urgently needed and critical for the region, and the information had to be shared in Arabic language. List of invasive species and relevant information provided by ICARDA, ACSAD and AOAD were welcomed by the workshop participants and these data sources could provide a good starting point for the regional invasive species information-sharing system;

(c) Raising public awareness on invasive alien species was a part of capacity-building and further collaboration with experts and journalists might facilitate capacity-building in the public;

(d) Capacity at the national level varied in the region. A few countries' NPPOs stressed that substantive improvement of infrastructure may be needed to address new invasive alien species in addition to the matters of plant pests;

(e) Capacity-building workshops that would be organized by the Secretariat in the future should include hands-on-training for conducting risk analysis and how to access necessary information for the analysis.

ITEMS 4 AND 5. OTHER MATTERS AND CLOSURE OF THE MEETING

36. There were no other matters. Participants thanked the UNEP-ROWA, the Secretariats of the CBD and the IPPC and the Government of the UAE for the capacity-building workshop. The workshop was closed on 13 February 2013 at 3:30 p.m.

FIELD TRIP

37. Participants visited Al Marmoum protected area, 30 km from Dubai, on 14 February 2013.

Annex I

ELEMENTS SUGGESTED BY THE WORKSHOP TO BE CONSIDERED AS A PART OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS

BAHRAIN

Targeted organisms:

Red palm weevil

Existing legislation, regulations and code of conduct:

(i) Quarantine law No 5 and No 8 (ii) Quarantine law No 4 on palm products.

The Current IAS management (Integrated border control):

The IAS issue is addressed through different agencies mainly the ministry of municipalities and agricultural affairs. There is no cooperation between these agencies and there is no list of IAS yet.

Knowledge and dimensions to be improved:

(i) Public awareness through the public awareness agency already existing, (ii) Information transfer and early warning..

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Agricultural resources agencies, The higher council for environment.
	Develop procedures to enhance cooperation.	The higher council for environment.
	Enable efficient emergency response.	The higher council for environment in collaboration with agricultural agencies.
	Review of biosecurity management effectiveness.	Ministry of Industry and Commerce.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministry of interior, customs.
	Develop appropriate risk analysis.	Customs.
	Develop and implement indicators.	The higher council for environment in collaboration with agricultural agencies.
	Implement the biosecurity research strategy.	The higher council for environment in collaboration with Universities,
Border Control	Educate travellers.	Customs.
	Development of import health standards.	Ministry of Health, customs.
	Improve the integrated border control system.	The higher council for environment in collaboration with agricultural agencies.
	Minimize the loss of indigenous biodiversity through illegal trade.	Ministries of Industry and Commerce, customs, the higher council for environment.
	Make available to importing countries any relevant information Bahrain has on the potential Invasiveness of species being exported.	Ministries of Industry and Commerce, customs, the higher council for environment.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	The higher council for environment in collaboration with universities, agricultural agencies and research centers.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	The higher council for environment in collaboration with universities and research centers.

	Establish a commission to review key issues surrounding the release of GMOs.	The higher council for environment in collaboration with universities and ministry of health.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	The higher council for environment in collaboration with universities, agricultural agencies.
	Raise public awareness about introduces species.	The higher council for environment, Media

COMOROS

Targeted organisms:

Aleurotrachelus atratus Hempel, Lanatana camara, Mimusa pigira, Eucaliptus, etc.....

The Current IAS management (Integrated border control):

There are insufficient activities to address the IAS issue.

Knowledge and capacity to be improved:

(i) Taxonomy capacity biding, (ii) Public awareness, (iii) Resource mobilization

Action plan:

Objective	Actions	Key players
Identification of invasive alien species	Identification of invasive alien species	Central government and local governments; University
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Central government
	Develop procedures to enhance cooperation.	Central government and local governments.
	Enable efficient emergency response.	Central government and local governments.
	Review of biosecurity management effectiveness.	Central government and local governments.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Central government
	Develop appropriate risk analysis.	Central government
	Develop and implement indicators.	Central government and local governments.
	Implement the biosecurity research strategy.	Central government
Border Control	Educate travellers.	Central government and local governments.
	Development of import health standards.	Central government and local governments.
	Improve the integrated border control system.	Central government and local governments.
	Minimize the loss of indigenous biodiversity through illegal trade.	Central government and local governments.
	Make available to importing countries any relevant information Comoros has on the potential Invasiveness of species being exported.	Central government.
Managing risk to	Develop and apply an integrated risk	Central government and local governments.

biodiversity from new organisms	assessment framework.	
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Central government.
	Establish a commission to review key issues surrounding the release of GMOs.	Central government.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Central government.
	Raise public awareness about introduces species.	Central government.

EGYPT

Targeted organisms:

Eichhornia crassipes, Pistia stratiotes, Prosopis glandulosa, Prochambrus clarkia, Carcinus maenas, Ceratitis capitata, Rhynchophorus ferrugineus, Bactrocera zonata, Scirtothrips aurantii, Gambusia affinis, Orchromis mossambicus, Siganus luridus, Ralstonia solana caerum, Radopholus similis.

Existing legislation, regulations and code of conduct:

(i) Agriculture law No 53 / 1966, (ii) Environmental protection law No 9/2009, (iii) National protectorates law No 102/1983 (iv) Egyptian plant quarantine legislation decree No 3007/2001.

The Current IAS management (Integrated border control):

(i) Action Plan to address IAS, (ii) management plan for address of some IAS, (iii) management plan of plant quarantine.

Knowledge and capacity to be improved:

(i) preparation of A list of IAS that has been introduced to Egypt, (ii) Provide all available information about some IAS to establish an IAS database, (iii) identify a list of high priority IAS and determining the effective response tools needed, (iv) Community based management of IAS (*prosopis juliflora*), (v) published a booklet on IAS, (vi) cooperation with the related authorities, (vii) prepared case studies, (viii) prepare many workshop and training courses, (ix) Established phytosanitary unit in 2005, (x) Biological control of some IAS.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Plant quarantine
	Develop procedures to enhance cooperation.	Ministry of Environment, agriculture and scientific institutions.
	Enable efficient emergency response.	Governmental authorities
	Review of biosecurity management effectiveness.	
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministry of agriculture and environment.
	Develop appropriate risk analysis.	
	Develop and implement indicators.	
	Implement the biosecurity research strategy.	Scientific institution, universities.
Border Control	Educate travellers.	

	Development of import health standards.	
	Improve the integrated border control system.	
	Minimize the loss of indigenous biodiversity through illegal trade.	
	Make available to importing countries any relevant information Egypt has on the potential Invasiveness of species being exported.	Ministry of agriculture.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Ministry of environment
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Ministry of environment
	Establish a commission to review key issues surrounding the release of GMOs.	Ministry of environment and agriculture.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Ministry of agriculture.
	Raise public awareness about introduces species.	Ministry of environment and agriculture.

IRAQ

Targeted organisms:

Eichhornia crassipes, *Tilapia zillii*, *Dreissena polymorpha*, *Tuta absoluta*, *Ceratitis capitata*, *Dacus ciliates*, *Dacus frontalis* and *Leptinotarsa decemlineata*.

Existing legislation, regulations and code of conduct:

Agricultural Quarantine No. (76) for the year 2012.

The Current IAS management (Integrated border control):

Lack of strategies and policies, but there are some legislation released to control the importing of invasive species.

Knowledge and dimensions to be improved:

(i) Public Awareness and Education (ii) Collect the information and preparing a list of IAS (iv) IAS steering committee (v) Strategies and plans including risk assessment, (vi) legislation to control species importing, (vii) Institutional coordination, (viii) Capacity building.

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Ministry of Environment and Ministry of Agriculture.
	Develop procedures to enhance cooperation.	Ministry of environment.

JORDAN

Targeted organisms:

Plant pests, weeds, animal pests, zoonosis.

Existing legislation, regulations and code of conduct:

(i) Creation of cabinet portfolio for biodiversity management (ii) Establishment of ministerial council involving ministries of agriculture, environment and health (iii) agricultural and environmental law (iv) regulations on quarantines.

The Current IAS management (Integrated border control):

(i) There is lack of resources to identify exotic organisms (ii) Surveillance programs are expensive and the geographically status is difficult.

Knowledge and capacity to be improved:

(i) Communication and exchange of information, (ii) Implementation of risk analysis, (iii) Capacity building, (iv) Resource mobilization (v) Expertise, (vi) IAS steering committee (to be implemented soon)

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Ministries of Environment and Agriculture.
	Develop procedures to enhance cooperation.	Ministries of Environment and Agriculture.
	Enable efficient emergency response.	Ministries of Environment, Health and Agriculture.
	Review of biosecurity management effectiveness.	Ministry of Environment.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministries of Tourism and Agriculture.
	Develop appropriate risk analysis.	Ministries of Environment and Agriculture.
	Develop and implement indicators.	Ministries of Environment and Agriculture.
	Implement the biosecurity research strategy.	Ministries of Environment and Agriculture.
Border Control	Educate travellers.	Ministry of Agriculture, Customs.
	Development of import health standards.	Jordan Food & Drug Administration (JFDA), Ministry of Agriculture
	Improve the integrated border control system.	Ministry of Agriculture, CBG.
	Minimize the loss of indigenous biodiversity through illegal trade.	Ministries of Tourism and Industry.
	Make available to importing countries any relevant information Jordan has on the potential Invasiveness of species being exported.	Ministries of Environment and Agriculture
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Jordan Food & Drug Administration (JFDA), Ministries of Environment, Health and Agriculture.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Ministries of Health and Agriculture, Customs.

KUWAIT

Existing legislation, regulations and code of conduct:

There is lake of legislation regarding the IAS issues in Kuwait.

The Current IAS management (Integrated border control):

The IAS portfolio is managed under the Environment Public Authority (EPA) and Public Authority of Agriculture and Fish Resources.

Knowledge and capacity to be improved:

(i) Public Awareness and Education, (ii) Implementation of relevant policies, (iii) Stakeholders contribution.

Action plan:

Objective	Actions	Key players
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Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Public Authority of Agriculture and Fish Resources.
	Develop procedures to enhance cooperation.	Environment Public Authority (EPA), Education, Research, Environment Public Authority (EPA).
	Enable efficient emergency response.	Public Authority of Agriculture and Fish Resources.
	Review of biosecurity management effectiveness.	Public Authority of Agriculture and Fish Resources, Environment Public Authority (EPA).
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Public Authority of Agriculture and Fish Resources, Environment Public Authority (EPA).
	Develop appropriate risk analysis.	Public Authority of Agriculture and Fish Resources, Environment Public Authority (EPA), Education and Research.
	Develop and implement indicators.	Public Authority of Agriculture and Fish Resources, Environment Public Authority (EPA) and others
	Implement the biosecurity research strategy.	Environment Public Authority (EPA), Kuwait Research Institute.
Border Control	Educate travellers.	Customs, Environment Public Authority (EPA).
	Development of import health standards.	Environment Public Authority (EPA), Ministry of Health, Customs.
	Improve the integrated border control system.	Public Authority of Agriculture and Fish Resources, Environment Public Authority (EPA), Customs.
	Minimize the loss of indigenous biodiversity through illegal trade.	All agencies concerned by biodiversity.
	Make available to importing countries any relevant information Kuwait has on the potential Invasiveness of species being exported.	Environment Public Authority (EPA), Ministry of Industry, Customs.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Research Institute.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Environment Public Authority (EPA), Education, Research. University of Kuwait.
	Establish a commission to review key issues surrounding the release of GMOs.	Environment Public Authority (EPA), Research. Environment Public Authority (EPA).
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Research Institute, Environment Public Authority (EPA), Education, Research.
	Raise public awareness about introduces species.	Environment Public Authority (EPA), Education, Research.

LEBANON

Existing legislation, regulations and code of conduct:

(i) Quarantine decrees (ii) Plant protection regulations. (iii) Environment law.

The Current IAS management (Integrated border control):

Ongoing activities on (i) Surveys on some IAS species, (ii) Quarantine and pathways, (iii) awareness, (iv) Research.

Knowledge and capacity to be improved and integrated in the action plan:

Improvement of (i) laws, (ii) Communication and early warning, (iii) training, (iv) Customs services.

Action plan:

Objective	Actions
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.
	Develop procedures to enhance cooperation.
	Enable efficient emergency response.
	Review of biosecurity management effectiveness.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.
	Develop appropriate risk analysis.
	Implement the biosecurity research strategy.
Border Control	Educate travellers.
	Development of import health standards.
	Improve the integrated border control system.
	Minimize the loss of indigenous biodiversity through illegal trade.
	Make available to importing countries any relevant information Lebanon has on the potential Invasiveness of species being exported.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.
	Establish a commission to review key issues surrounding the release of GMOs.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.
	Raise public awareness about introduces species.

MAURITANIA

Targeted organisms:

Typha australis, Prosopis spp, Cuscuta campestris, salvinbia molesta, alagea, eichhorma crassipes, pistia stratroites, azolla spp.

Existing legislation, regulations and code of conduct:

(i) Decree 1248 on IAS, (ii) Decree 1257 on quarantine, (iii) Law 04212000 on plant protection.

The Current IAS management (Integrated border control):

Ongoing activities on (i) evaluation of the infested areas, (ii) Capacity building, (iii) awareness, (iv) control and eradication, (v) Quarantine.

Knowledge and capacity to be improved:

Improvement of (i) laws, (ii) Communication and early warning, (iii) training, (iv) Customs services.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Central Government.
	Develop procedures to enhance cooperation.	Local Government.
	Enable efficient emergency response.	Central Government.
	Review of biosecurity management effectiveness.	Central Government.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Central Government.
	Develop appropriate risk analysis.	Local Government.

	Develop and implement indicators.	Central Government.
	Implement the biosecurity research strategy.	Local Government.
Border Control	Educate travellers.	Local Government.
	Development of import health standards.	Local Government.
	Improve the integrated border control system.	Local Government.
	Minimize the loss of indigenous biodiversity through illegal trade.	Central Government.
	Make available to importing countries any relevant information Mauritania has on the potential Invasiveness of species being exported.	Central Government.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Central Government.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Local Government.
	Establish a commission to review key issues surrounding the release of GMOs.	Central Government.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Local Government.
	Raise public awareness about introduces species.	Local Government.

MOROCCO

Targeted organisms:

Red palm weevil, Tuta absoluta, etc....

Existing legislation, regulations and code of conduct:

(i) Dahir of 1927 and application texts (ii) Dahir of 1927 and biodiversity and health of plant, (iii) in 2010 the animal and plant health merged with the food safety.

The Current IAS management (Integrated border control):

(i) Action Plan to address IAS, (ii) management plan for address of some IAS, (iii) management plan of plant quarantine.

Knowledge and capacity to be improved:

(i) preparation of A list of IAS that has been introduced to Egypt, (ii) Provide all available information about some IAS to establish an IAS database, (iii) identify a list of high priority IAS and determining the effective response tools needed, (iv) Community based management of IAS (*prosopis juliflora*), (v) published a booklet on IAS, (vi) cooperation with the related authorities, (vii) prepared case studies, (viii) prepare many workshop and training courses, (ix) Established phytosanitary unit in 2005, (x) Biological control of some IAS.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity	Clarify and assign roles and responsibilities for biosecurity management.	Ministry of agriculture and environment, other stakeholders, etc...

management.	Develop procedures to enhance cooperation.	Ministry of agriculture and environment.
	Enable efficient emergency response.	Ministry of environment.
	Review of biosecurity management effectiveness.	Ministry of agriculture and environment.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministry of agriculture and environment.
	Develop appropriate risk analysis.	Ministry of agriculture.
	Develop and implement indicators.	Ministry of agriculture and environment.
	Implement the biosecurity research strategy.	Ministry of agriculture and environment, research institutes.
Border Control	Educate travellers.	Ministry of agriculture.
	Development of import health standards.	Ministry of agriculture, customers.
	Improve the integrated border control system.	Customers.
	Minimize the loss of indigenous biodiversity through illegal trade.	
	Make available to importing countries any relevant information Morocco has on the potential invasiveness of species being exported.	Ministry of agriculture and environment.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Ministry of agriculture and environment.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Ministry of agriculture (legal arsenal).
	Establish a commission to review key issues surrounding the release of GMOs.	Ministry of agriculture, prime minister.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Ministry of agriculture.
	Raise public awareness about introduces species.	Ministry of agriculture and environment.

OMAN

Targeted organisms:

Common myna (*Acridotheres tristis*), Rose ringed parakeet (*Psittacula krameri*), *Cochlodinium polykrikoies*, *Gymnodinium mikimotoi*, *Karenia mikimotoi*, Red palm weevil (*Rhynchophorus ferrugineus*), Tomato leaves borer (*Tuta absoluta povolny*), Peach fruit fly (*Bactrocera zonata*).

Existing legislation, regulations and code of conduct:

(i) Plant quarantine law, (ii) Agriculture law (R.D No 48/2006), (iii) Plant genetic resources protection law (R.D. No 92/2000), (iv) Pastures law and animal production management (R.D. No 8/2003), (v) Veterinary quarantine law (R.D. No 47/2004), (vi) Food safety law (R.D 48/2008), (vii) Nature reserves and wild life protection law (R.D No 6/2003), (viii) Environmental protection and pollution control law (R.D No 114/2001), (ix) Oman member in CBD, CITES, Ramsar, IPPC, PIE, WTO, etc...

Current IAS management:

(i) Mechanical eradication campaigns for mesquite plants and integrated weed management programme. (ii) Plant and veterinary quarantine, (iii) there are laboratories for diagnosing plant and animal pests and diseases.

Knowledge and capacity to be improved:

There are existing information departments in the concerned agency, but we need urgently to initiate two units; one for early warning for IAS and another for public awareness.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Ministries of Environment and climate affairs, Agriculture and fisheries, Municipalities and water resources transport and communication, Commerce, industry and Health, Sultane Qaboos University, Scientific Research council, Diwan affairs, Muscat and Dhofar municipality Oman Environment society, Royal Oman police.
	Develop procedures to enhance cooperation.	Ministry of environment and climate affairs.
	Enable efficient emergency response.	Ministry of environment and climate affairs.
	Review of biosecurity management effectiveness.	Ministry of environment and climate affairs
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministries of environment and climate affairs, Agriculture and fisheries.
	Develop appropriate risk analysis.	Ministries of environment and climate affairs, Agriculture and fisheries.
	Develop and implement indicators.	Ministries of environment and climate affairs.
	Implement the biosecurity research strategy.	Ministries of Agriculture and fisheries, Sultan Qaboos University, Scientific Research Council.
Border Control	Educate travellers.	Ministries of Environment and climate affairs, Agriculture and fisheries, Municipalities and water resources transport and communication, Commerce, industry and Health, Sultane Qaboos University, Scientific Research council, Diwan affairs, Muscat and Dhofar municipality Oman Environment society.
	Development of import health standards.	Ministries of Environment and climate affairs, Agriculture and fisheries and Royal Oman police.
	Improve the integrated border control system.	Ministries of Environment and climate affairs, Agriculture and fisheries and Royal Oman police.
	Minimize the loss of indigenous biodiversity through illegal trade.	Ministries of Environment and climate affairs, Commerce and industry.
	Make available to importing countries any relevant information Oman has on the potential Invasiveness of species being exported.	Ministry of Environment and climate affairs.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Ministries of Agriculture and fisheries, Sultan Qaboos University, Scientific Research Council.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Ministry of Environment and climate affairs.
	Establish a commission to review key issues surrounding the release of GMOs.	Ministry of Environment and climate affairs.

SAUDI ARABIA

Targeted organisms:

Prosopis juliflora, calotropis procera, nicotiana glauca, Red palm weevil, *monomarium pharaonis, acridotheres tristis, corus splendens, mus musculus, gambusia affinis etc....*

Existing legislation, regulations and code of conduct:

/...

(i) The NBSAP of KSA, (ii) The agricultural and veterinary quarantine regulations (1975), (iii) Living marine resources, hunting, protection and utilization act (1988), (iv) the general decree for the environment, (v) The environment law (2001)

The Current IAS management (Integrated border control):

There are three main methods of management of IAS as following :(i) Mechanical (ii) Chemical, (iii) Biological.

Knowledge and capacity to be improved:

(i) Information management and research including monitoring, (ii) Capacity building and education, (iii) Public awareness, (iv) Institutional involvement, policy and legal review, (v) Regional and international cooperation and technical support..

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Saudi Wildlife Authority, Ministries of Agriculture, Meteorology and Environment.
	Develop procedures to enhance cooperation.	Saudi Wildlife Authority, Ministry of Agriculture.

SUDAN

Targeted organisms:

Water Hyacinth, Mesquite (Prosopis Chilensis), Fruit flies, Faba bean broomrape, Breen pit scale insect.

Existing legislation, regulations and code of conduct:

The existing management system in Sudan for IAS is fragmented among different sectors including plant protection directorate, animal resources and fisheries, ministries of health, environment, Forest Corporation and customs directorate. However, there is a well-established coordinating body (higher Council for Environment and Natural Resources). Its role is to coordinate between different bodies for biodiversity conservation issues. Sudan has a large numbers of environmental laws and acts that includes the following: (i) Environmental act 2001, (ii) the interim national constitution 2005, (iii) locust control act 1907, (iv) the plant disease act 1913, (v) Agricultural pests control act 1919, (vi) Cotton ordinance 1926 \$ 1929, (vii) Water Hyacinth control act 1960, The pesticides and pests control products act 1974 & 1994, (viii) Plant protection bill of Sudan 2001 & 2012, (ix) Sudan membership in CBD, CITES, Ramsar, etc....

Current IAS management (Integrated border control):

(i) Surveillance programmes for specific pest species are costly, and therefore the geographical and ecological scope of surveillance programmes is restricted, (ii) there have been inconsistencies, both within and between agencies, (iii) under the CBD, Sudan has agreed to promote notification, exchange of information.

Knowledge and capacity to be improved:

(i) To achieve our objectives the following actions should be taken: (ii) Institutional and technical capacity building, (iii) Raising awareness, (iv) Education, (v) Campaigns to identify and priorities IAS, (vi) Risk Analysis, (vii) establishment of national committee on IAS, (viii) Establishment of specific act on IAS.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Higher council for environment and natural resources.
	Develop procedures to enhance cooperation.	Higher council for environment and natural resources and others.
	Enable efficient emergency response.	Higher council for environment and natural resources and others.
	Review of biosecurity management effectiveness.	Higher council for environment and natural resources and others.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Plant protection directorate.
	Develop appropriate risk analysis.	Plant protection directorate.
	Develop and implement indicators.	Higher council for environment and natural resources.
	Implement the biosecurity research	Higher council for environment and natural

	strategy.	resources.
Border Control	Educate travellers.	Agricultural extensions, Plant protection directorate.
	Development of import health standards.	Sudanese Standards Measurement Organization, Ministry of health.
	Improve the integrated border control system.	Plant protection directorate.
	Minimize the loss of indigenous biodiversity through illegal trade.	Customs directorate.
	Make available to importing countries any relevant information Sudan has on the potential Invasiveness of species being exported.	Plant protection directorate.
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Biosafety council.
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Biosafety council.
	Establish a commission to review key issues surrounding the release of GMOs.	Biosafety council.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Border quarantine.
	Raise public awareness about introduces species.	Higher council for environment and natural resources.

TUNISIA

Targeted organisms:

Solanum elaeagnifolium, Pinctada radiate,

Existing legislation, regulations and code of conduct:

In Tunisia, we haven't any rules or legislative specific on IAs. However, some sectorial codes and legislation are related to some sectors such as Forest, quarantine, and protection plants legislations.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Ministries of environment, agriculture, health, finance, NGOs....
	Develop procedures to enhance cooperation.	Ministry of environment, in collaboration with other ministries, NGOs....
	Enable efficient emergency response.	Ministry of environment, in collaboration with other ministries, NGOs....
	Review of biosecurity management effectiveness.	Ministry of environment, in collaboration with other ministries, NGOs....
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministry of environment, in collaboration with other ministries, NGOs....
	Develop appropriate risk analysis.	Ministry of environment, in collaboration with other ministries, NGOs....
	Develop and implement indicators.	Ministry of environment, in collaboration with

		other ministries, NGOs....
	Implement the biosecurity research strategy.	Ministry of environment, in collaboration with other ministries, NGOs....
Border Control	Educate travellers.	Ministry of environment, in collaboration with other ministries, NGOs....
	Development of import health standards.	Ministry of environment, in collaboration with other ministries, NGOs....
	Improve the integrated border control system.	Ministry of environment, in collaboration with other ministries, NGOs....
	Minimize the loss of indigenous biodiversity through illegal trade.	Ministry of environment, in collaboration with other ministries, NGOs....
	Make available to importing countries any relevant information Tunisia has on the potential Invasiveness of species being exported.	Ministry of environment, in collaboration with other ministries, NGOs....
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Ministry of environment, in collaboration with other ministries, NGOs....
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Ministry of environment, in collaboration with other ministries, NGOs....
	Establish a commission to review key issues surrounding the release of GMOs.	Ministry of environment, in collaboration with other ministries, NGOs....
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Ministry of environment, in collaboration with other ministries, NGOs....
	Raise public awareness about introduces species.	Ministry of environment, in collaboration with other ministries, NGOs....

QATAR

Targeted organisms:

Red palm weevil, kenya karpes, Algea, etc...

Existing legislation, regulations and code of conduct:

(i) Quarantine law, (ii) Veterinary law, (iii) trade of living organism law, (iv) Environment law.

The Current IAS management (Integrated border control):

Except red palm weevil and *Kenya karpes*, there is no real and serious ongoing activities to address the IAS issue in Qatar.

Knowledge and capacity to be improved:

Improvement of (i) laws, (ii) Communication and early warning, (iii) training, (iv) Customs services, (v) Public awareness, (vi) Research and taxonomy.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Public sector with collaboration of private sector.
	Develop procedures to enhance cooperation.	Consultancies.
	Enable efficient emergency response.	National Committee for Biodiversity.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Public sector
	Develop appropriate risk analysis.	Agriculture, environment and research sectors.
	Develop and implement indicators.	
	Implement the biosecurity research strategy.	Research sector.
Border Control	Educate travellers.	Outreach sector.

	Development of import health standards.	Quarantine.
	Improve the integrated border control system.	Quarantine.
	Minimize the loss of indigenous biodiversity through illegal trade.	Legislators.
	Make available to importing countries any relevant information Qatar has on the potential Invasiveness of species being exported.	Quarantine.
Managing risk to biodiversity from new organisms	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Agriculture and environment sectors.
	Establish a commission to review key issues surrounding the release of GMOs.	National Committee for Biodiversity.
Managing potential pest species	Develop and implement procedures to prevent escape from captivity of imported species.	Agricultural sector.

UNITED ARAB EMIRATES

Targeted organisms:

House Crow, *Corvus splendens* Common myna (*Acridotheres tristis*), Red palm weevil (*Rhynchophorus ferrugineus*) and among the invasive plants are *Conocarpus lancifolius* (Damas) and *Prosopis juliflora* (Mesquite).

Existing legislation, regulations and code of conduct:

Federal Law No. (5) of 1979 on the agricultural quarantine, as amended by Federal Law No. (6) of 1992, Federal Law No. (6) of 1979 on the veterinary quarantine, as amended by the Federal Law No. (7) of 1992, Federal Law No. (38) of 1992 concerning the establishment of nurseries and regulate the production, import and trading of seedling., Federal Law No. (24) of 1999 for the Protection and Development of the Environment, as amended by Federal Law No. (12) of 2006,

Law of seeds, seedlings, and its executive directive, GCC, (2009), UAE is a member in CBD, CITES, Ramsar, IPPC, PIE, WTO, etc.

Current IAS management:

(i) Mechanical eradication campaigns for mesquite plants and integrated weed management programme. (ii) Plant and veterinary quarantine, (iii) there are laboratories for diagnosing plant and animal pests and diseases. Additionally, chemical and biological methods are used in management of IAS.

Knowledge and capacity to be improved:

Information departments are available in the Ministry of Environment and Water (MoEW) and in all competent authorities, but we need to improve the knowledge for IAS and increase the public awareness.

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Ministry of Environment and Water, Strategic partners.
	Develop procedures to enhance cooperation.	National Biosecurity Higher Committee headed by H.H. Minister of Environment and water.
	Enable efficient emergency response.	Ministry of Environment and Water, Competent authorities.
	Review of biosecurity management effectiveness.	Ministry of Environment and Water, Competent authorities.
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Competent authorities.
	Develop appropriate risk analysis.	National Biosecurity Higher Committee headed by H.H. Minister of Environment and water, National

		Biological Threats Risk register.
	Develop and implement indicators.	Ministry of Environment and Water, Competent authorities.
	Implement the biosecurity research strategy.	Ministry of Environment and Water, Competent authorities.
Border Control	Educate travellers.	Ministry of Environment and Water, Competent authorities, Airport and custom authorities, Media.
	Development of import health standards.	Ministry of Environment and Water and Competent authorities
	Improve the integrated border control system.	Ministry of Environment and Water and Competent authorities
	Minimize the loss of indigenous biodiversity through illegal trade.	Ministry of Environment and Water and Competent authorities
	Make available to importing countries any relevant information UAE has on the potential Invasiveness of species being exported.	Ministry of Environment and Water
Managing risk to biodiversity from new organisms	Develop and apply an integrated risk assessment framework.	Ministry of Environment and Water and Competent authorities
	Clarify responsibilities for management responses where unintended adverse effects from new organisms occur.	Ministry of Environment and Water and Competent authorities
	Establish a commission to review key issues surrounding the release of GMOs.	Ministry of Environment and Water and Competent authorities

YEMEN

Targeted organisms:

Red palm weevil, etc...

Existing legislation, regulations and code of conduct:

(i) Quarantine law, (ii) Plant protection law 17 / 2009 (iii) trade of living organism law, No 11 / 2002 (iv) environmental law No 16/2007, (v) Nakhilana initiative, (vi) Environment protection law No 24 / 1999 and No. 20/2006.

The Current IAS management (Integrated border control):

Establishment of a list of quarantine pests

Knowledge and capacity to be improved:

(i) Taxonomy capacity building (ii) Communication and early warning, (iii) training, (iv) Customs services, (v) Public awareness.

PALESTINIAN AUTHORITY

Targeted organisms:

Red palm weevil, Tuta absoluta, Bactrocera zonata, Solanum elaeagnifolium, Sus scrufa, Acridotheres tristis, Aitanthus aestina, Amaranthus retroflexus.

Existing legislation, regulations and code of conduct:

Quarantine regulations

Current IAS management (Integrated border control):

(i) Quarantine measures in IAS are implemented, (ii) monitoring system for quarantine pests such as *Rhynchophorus ferrugines*, (ii) IPM programmes, (iii) regulations and control measures for imported goods.

Knowledge and capacity to be improved:

(i) Update of IAS list, (ii) trained staff, (iii) Public awareness, (iv) Financial resources, (v) risk analysis.

/...

Action plan:

Objective	Actions	Key players
Coordinating biosecurity management.	Clarify and assign roles and responsibilities for biosecurity management.	Ministries of environment, agriculture, Media, customs, NGOs
	Develop procedures to enhance cooperation.	Ministries of environment, agriculture, universities, NGOs
	Enable efficient emergency response.	Ministries of environment, agriculture, Media, customs, universities, NGOs
	Review of biosecurity management effectiveness.	Ministries of environment, agriculture, National consultants, research centers, NGOs
Methods of assessing biosecurity.	Assess the probability of adverse effects on indigenous biodiversity from potential pest species.	Ministries of environment, agriculture, National consultants, research centers, universities, NGOs
	Develop appropriate risk analysis.	Ministries of environment, agriculture, National consultants.
	Develop and implement indicators.	Ministries of environment, agriculture, NGOs
	Implement the biosecurity research strategy.	Ministries of environment and agriculture.
Border Control.	Educate travellers.	Customs.
	Development of import health standards.	Ministries of environment, agriculture and health.

Annex II

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