Introduction:

Sustainability strands appears in the table in the following sequence:

Sustainability strands	Planning Level	Level of consensus[1] [2] [3]
Theme (1)		
Target 1:		
Action 1	**L:** Local	
Action 2	**R:** Regional	
Action 3	**N:** National	
Target 2:		
Action 1		
Action 2		
Theme (2)		

How to read the tables:

Themes	
Targets	**Pre-planning**
	During-planning
	Post-planning
Actions	Planning actions
	Management and follow-up actions

[1] The level of consensus is the consensus among the panel members that indicates the level of importance of each theme, target and action.

[2] The level of importance (5: 'very important', 4: 'important', 3: moderately important, 2: slightly important', or 1: 'not at all important') was measured according to the following benchmarks:

- Strong positive consensus: at least 80% of respondents ranked the item four or five.
- Moderate positive consensus: at least 60% to 79% of respondents ranked the item or issue at least four or five.
- Elimination criteria: at least 80% of respondents ranked the issue one or two and thus could be discounted.

[3] The calculation procedure: counting the number of times the item is rated (5) or (4) then dividing this number by the total number of participated experts. Then we convert the number into percentage. This gives the percentage of consensus around each item which reflects its level of importance as you have stated.

1- Environmental dimension

SD Theme (1): Regional Environmental Compatibility and Sensitivity		**100**
Reduce environmental stress and minimize environmental damage		**100**
Ensure that environmental studies are involved through the whole planning process (from planning to implementation) to measure and monitor the extent to which the development is sustainable.	N, R, L	88.9
Introduce specific strategies to adapt to and mitigate with the climate variability.	R, L	94.4
Obligate environmental impact assessment (EIA) for major projects, and strategic environmental assessment (SEA) for all plans and policies.	N, R, L	100
Modify environmental requirements, standards and legislations to be capable with the deserts characteristics to include: different environmental patterns, ways of intervention, legal penalties.	N, R, L	83.3
Activate strictly the polluters pay principle where compensations imposed to the inventors/developers in case of exceeding the permitted ecological capacities.	R, L	94.4
Promote economic practices applicable to the unique environment		**100**
Impose responsibility standards for all economic development especially in highly environmental sensitive areas.	R, L	83.3
Set a detailed list of ecological capacities and defined ecological footprints for each economic activity, then promote the less harmful activities on the region.	R, L	66.7
Enhance conservation of biological diversity and ecosystems		**94.4**
Ensure that Environmental impact assessment has an emphasis on biodiversity and ecosystem processes.	R, L	77.8
Use planning tools for Identifying, governing and protecting natural resources and rare/threatened species.	R	83.3
Ensure prevention from natural risks aiming at reaching a safe development		**94.4**
Proposed plans are clearly identifying and dealing effectively with natural risks by applicable and suitable techniques, tools, mechanisms and methodologies.	R, L	88.9
Establish a regional unit responsible for risk management.	R	83.3
Establish environmental observatory units for desert regions using knowledge-based systems and information sensors	R	83.3
SD Theme (2): Recourses Usage and Management		**100**
Ensure locally available and valid resources to serve the development for long term		**77.8**

All planning decisions are considering short to long-term influences on local resources.	N, R, L	88.9
Ensure planning's dependence on local resources (highly resilient development).	R, L	77.8
Ensure efficient resources usage		**100**
The plans limit the usage of non-renewable resources.	R, L	83.3
Design integrated regional systems for resources usage, waste management, and energy supply.	R	83.3
Identification of the resources' carrying capacities, formulate resources usage limits lists and establish legislations for their usage rates in sectorial strategies.	R	72.2
Mitigate negative environmental impacts		**88.9**
Ensure that sustainability principles, environmental capacities and guidelines are effectively included in the plans.	R, L	88.9
Include SEA, EIA from the start of the planning process and should include suggested mitigation/adaptation procedures.	R, L	83.3
Develop independent local agricultural systems		**77.8**
Propose sustainable pattern of agriculture and crop structure that is compatible with the desert environment that consume low water and have high market value	R	88.9
Use technologies that enhance developing agricultural systems using seawater.	R	72.2
SD Theme (3): Energy Recourses Availability		**94.4**
Encourage usage of renewable, clean, non-traditional, diverse energy resources		**94.4**
Impose detailed studies for identifying energy resources in the region.	R	72.2
All plans should depend on new and renewable energy applications as main energy resources (such as windfarms, solar energy stations, and biogas).	R, L	77.8
Provide financial incentives for renewable energy applications and subsidizing collective initiatives for providing solar energy (solar farms, biogas substations).	R, L	94.4
Improve energy efficiency (Energy conservation and reduce consumption)		**100**
Plans promote the shifting from heavy energy consuming buildings, to smart net-zero energy buildings and communities.	L	72.2

Enable strict new laws specifically for desert regions that support 'green technologies' (e.g. small-scale renewable energy technologies, where applicable.	N, R, L	77.8
Offer subsidization to developers to use new technologies and eliminate it from whom are using conventional energy resources.	R, L	88.9
Local partial or complete energy dependency for the region		**94.4**
Establishment of national energy strategy that involves the development of solar power/wind farms to assure region's net-growth energy production within.	N	83.3
Usage of innovative and separated energy supply systems such as off-grid or stand-alone system.	N, R	83.3
SD Theme (4): Water Concerns		**88.9**
Clear identification of water sources and the time horizon of dependable water supplies into the future (short and long term)		**94.4**
Accurate information collection about various water resources, and available quantities in the region.	R	83.3
Development plans ensure water supply according to the carrying capacities and regional land-use plan's priorities.	R	94.4
Explore environmental impact assessment for the usage of different water options in the region.	R	83.3
Managing water supply and demand (supply = demand).	R, L	94.4
Modelling future trends of water demand and its availability under climate change and environmental risks.	R, L	88.9
Ensure water use efficiency on short and long term		**94.4**
Settlements' landscape design aims to minimize water resource usage.	L	83.3
Set an effective official awareness strategy on water use.	R, L	72.2
Using technologies to lessen water waste in the water networks and irrigation.	R, L	94.4
Provide financial and regulatory support for mechanisms to reduce wastewater and water reuse in desert areas.	R, L	83.3
Governance control over water resources on regional and local levels		**83.3**
Build regional integrated management system for water resources in the region.	R, L	88.9
Offer incentives for using new technologies in recycling wastewater.	R, L	83.3
Usage of diverse water resources and encourage innovative techniques		**94.4**
Plans suggests the usage of ground water within safe withdrawing rates of underground water for the region.	R, L	88.9

Promote seawater desalination and recommended the share of its investment between both, the government and private sector.	R	66.7
Managing and using the rain/storm water by building dams and catchment areas.	R, L	88.9
Put water resources central in all development decisions		**77.8**
Create a national water policy that considers the potential impacts of developing the deserts on water resources.	N	94.4
Plans promote economic activities and land uses that have minimum water use.	R, L	88.9
SD Theme (5): Environmental Awareness and Education		**66.7**
Required environmental ethics education for new populations and local communities		**66.7**
Activation of educational environmental and cultural programs.	L	66.7
Expand the environmental awareness through knowledge programs, training centres, and communication building.	L	72.2
Providing training and vocational/technical education to support the workforces' skills and competence.	L	72.2
Support responsible development (giving the people the development lead)		**77.8**
Support community management skills and introduce self-development methods	L	66.7
Form a localized facilitation unit to communicate development guidelines and incentives with local communities.	L	72.2
Educate and train the residents through pilot projects models.	L	77.8
Improve level of knowledge, skills, education and trainings of local and new people		**77.8**
Support women's programs for literacy and training.	L	66.7
Create a research and development regional centres for desert related issues.	R	83.3
Increase employment's capability to apply new technologies in these regions.	R, L	72.2

2- Social dimension

SD Theme (8): Local Population		**83.3**
Understanding/reflecting needs and priorities of local communities in new development		**94.4**
Detailed Survey of existing social conditions, and data gathering regarding who may be affected by the new development.	R, L	77.8
Inclusion of social dimensions and needs during all phases of planning.	R, L	83.3
Comprehensive understanding of local people's capacities and limitations.	R, L	83.3
Identification and understanding the characteristics of targeted new populations immigrating to the new developments.	R, L	83.3
Support/improve local communities' development		**83.3**
Proposed development projects should primarily target community development	R, L	83.3
Empower local communities gradually with development decision and authority.	L	77.8
Enhance local community and CBOs (community-based organizations) involvement in building and development activities to benefit from their skills and knowledge about the deserts' development.	L	83.3
Support participation of local communities in the planning process		**94.4**
Identification and inclusion of local stakeholders, and defining their roles through planning, construction, monitoring and evaluation processes.	R, L	83.3
Using a variety of appropriate methods and programmes at each stage of the planning and implementation processes, for a pro-active exchange of information and views to motivate local communities' continuous involvement.	R, L	77.8
Adopting a preparation stage to educate and provide local communities with helpful information about how they can be engaged.	R, L	66.7
Building trust between local people and the government by implementing pilot projects to provide job opportunities and solve some of communities' problems.	R, L	83.3
Create an updated information system with the land ownership in desert areas.	R	88.9
Establish tools to help reducing land encroachment problem.	R, L	72.2
SD Theme (9): Settlement of New Population		**83.3**

Balance between the national target to alleviate population pressures from populated regions and the capabilities of desert environments to absorb this populations		**83.3**
Establish a holistic national population policy that evidently justifies the need for desert development in terms of national-scale sustainability.	N	83.3
Employ population attracting policies in desert regions and repel policies for condensed regions.	N, R	66.7
Ensure compatibility between proposed new settlements' population sizes and existing urban pattern in the region		**88.9**
Propose a balanced network of small and medium settlements (urban and rural)	R	72.2

3- Economic dimension

SD Theme (6): Sustainable Investment and Financial Control		**77.8**
Encourage diverse, green and sustainable investment opportunities in desert areas		**77.8**
Promote industrial activities compatible with environmental regulations / limits.	R, L	77.8
Set an investment phased plan that coincide with urban growth and phased development.	R	72.2
Offer incentives for investing in desert/new development areas particularly in untraditional infrastructure projects (such as new energy projects….).	N, R	72.2
Create local generation of capital and financial resources that returns locally through local distribution system		**83.3**
Tracking and governing local economy flow to ensure higher percentage of the local economy that is recycled locally to achieve proper economic returns.	L	66.7
Promote investments in local economic projects		**83.3**
Increase regional investment share in local projects and SMEs.	R	77.8
SD Theme (7): Place Based Economic Development		**94.4**
Ensure locally self-dependency on resources and capital for the settlements and region		**77.8**
Preparation of an economic plan for the region that focuses on local resources and local labour in activities and jobs that are compatible with local community's characteristics.	R	72.2
Promote traditional and place-originated industries and SME business incubators	R, L	83.3
Support the competitiveness of local economic activities		**72.2**
Development plans supports highly economic influence SME activities	R, L	77.8
Integrate technological techniques in local industries.	R, L	66.7
Support green and environment friendly economic activities		**88.9**
Plans promote economic activities based on their ecological footprints.	R, L	88.9
Promote and increase the green jobs in the proposed economic activities.	R, L	72.2
Expanding education and training programs related to environmentally compatible economic activities.	R, L	77.8
Enhance technologies in economic activities that lessen the environmental costs.	R, L	83.3

Encourage eco-tourism and deserts' unique activities such as desert safari and the local people folklore.	L	72.2
Assure variety and diversity in proposed economic activities		**83.3**
Provide diverse economic activities compatible with both local and new people.	R, L	72.2
Establishing small factories for local people related to the local Agri-products.	L	66.7

4- Governance dimension

SD Theme (10): Urban Development Governance and Management		94.4
Attain balance between environmental holding capacities and urban growth in deserts		**77.8**
Ensure accurate identification of urban systems in relation to type, size, and pattern of the proposed settlements.	R	77.8
Propose urban development approach to integrate new and existing settlements.	R	72.2
Enhance phasing of planning and urban growth (development control)		**66.7**
Establishment of incremental and phased development plan that considers balanced thresholds in each sector: water, production, investment, and finance.	R	77.8
Frame clear governance networks between new urban areas and urban centres		**66.7**
Establish governance network, communication channels, and instruments between competent authorities to promote interaction horizontally between sectors and vertically between planning levels.	N, R, L	83.3
Identify clearly responsibilities and roles of different authorities (local and regional), and delegate decision making authority to a regional and local level.	R, L	88.9
Create a regional planning unit and activate its role to both harmonise the relationship between the national and local priorities, and to coordinate between the authorities and ministries at the regional level.	R	83.3
Capacity building for knowledgeable authorities' staff		**66.7**
Create an integrated national/regional database.	N, R	83.3
Support self-governing communities and their ability to lead the development		**77.8**
Prioritizing local people to hold positions in the administrative structure and local authorities.	L	66.7

5- Urban development dimension

SD Theme (11): Liv-able Communities		**94.4**
Acquire resilience through diverse/competitive local livelihoods		**94.4**
Development plans include diversity of place-dependent livelihoods options /jobs relevant to the population and their competence.	R, L	72.2
Ensure sufficient infrastructural base for the new development		**88.9**
Promote clean environment-friendly transportation system.	R, L	88.9
Implementing transit-oriented development model (TOD) to maximise access to public transport.	R, L	72.2
Ensure reasonable access to all basic services that guarantee sustaining the community		**100**
Providing appropriate education, health, social services.	R, L	100
Locate the main services within a reasonable distance to allow easy access from different parts of the residential cluster.	L	88.9
Providing for targeted affordable/appropriate housing populations		**88.9**
Adopting initiatives to involve and train the local communities in designing and constructing their houses.	L	66.7
Encourage private sector through incentives (in infrastructure, or right of use assist, or instalment, etc.) to invest in housing for middle/low-income families.	L	66.7
Create sustainable desert-specific urban environments		**83.3**
Issuing desert specific planning and building codes to emphasize special conditions as climatological conditions and specific environmental, social and economic challenges.	L	77.8
Encourage and provide incentives for investors using local materials and local buildings techniques that minimize the absorption of solar heat.	L	83.3
Recommend the usage of traditional ways of local people in dealing with desert threats such as sand dunes.	L	66.7
Develop ecological waste management systems and conditions		**72.2**
Incorporate official and local community initiatives that encourage the separation of solid waste in the origin, to facilitate waste recycling.	L	83.3
Dedicate appropriate locations to dispose, reuse and recycle the waste.	R, L	83.3
SD Theme (12): Place-specific Urban Development (Regionally and Locally)		**77.8**
Balancing regional urban landscape with environmental natural landscape		**94.4**

Reiteration and application of Agenda 21 sustainable development commitments and UN Sustainable goals.	R, L	83.3
Design desert-specific urban form and urban planning norms and standards		**88.9**
Site selection of the new settlements should include climatic and environmental aspects of desert environments.	L	94.4
Set urban and architectural criteria/regulations appropriate for deserts' specifics.	L	94.4
Regulation reform allowing for mixed-use development.	L	66.7
Incentives for balanced and planned intensification and densification, coupled with taxation on building/spreading on periphery extensions.	L	66.7
Apply various environmental/efficiency standards (LEED, ISO 14001).	L	72.2
SD Theme (13): Connectivity and Lessen Isolation		**88.9**
Support strong linkages/connectivity on all levels - between proposed new developments and existing urban centres, between settlements within the region, and locally within the settlement		**83.3**
Propose minimal and efficient transport networks between settlements and with external ports.	L	77.8
Urban plans attain integration in services and economic activities in the region.	R	77.8
Settlement's plans ensure strong connections internally (Incentives for work/reside integration, providing work place as a mixed used within residential areas, Providing subsidized/affordable cycling/mass-transit options).	L	77.8
Supporting investment and private sector involvement in providing infrastructure, communication and transportation networks.	R, L	66.7
Create stable, safe and independent communities yet strongly connected to urban regions.		**83.3**
None of the suggested actions reached consensus		