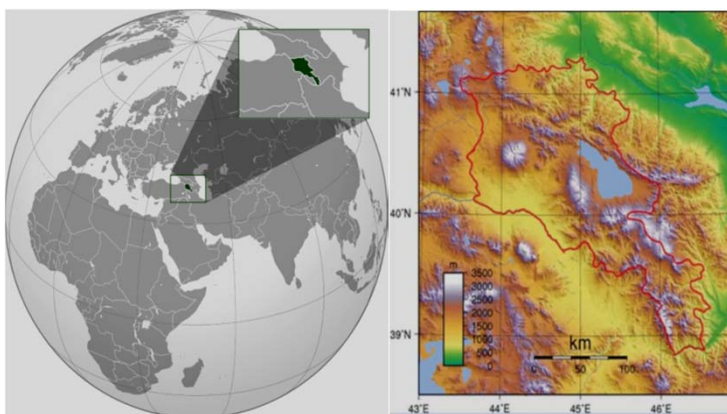# Armenia: Road Map for the Development of Climate Change-related Statistics

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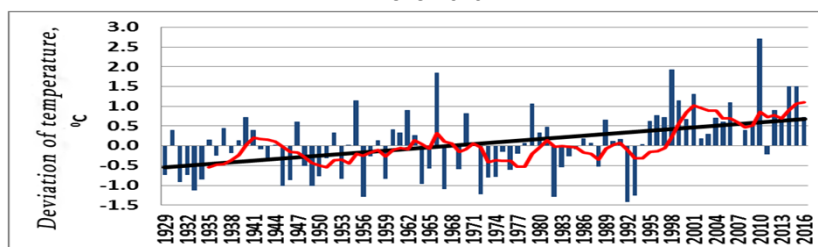
UNECE Conference of European Statisticians
Expert Forum for producers and users of climate change-related statistics
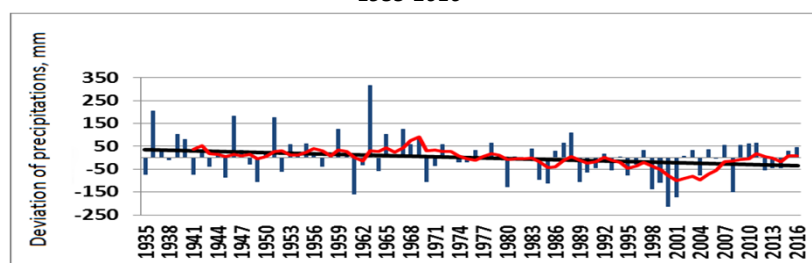Geneva, 2-4 October 2018

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Departure of annual average temperature from the 1961-1990 normal, Armenia – 1929-2016

Departure of annual average precipitation from the 1961-1990 normal, Armenia – 1935-2016

3

Statistics considered in the road map:

- statistics measuring GHG emissions
- statistics measuring human activities that are the source of GHG emissions (e.g. industrial production)
- statistics measuring impacts of climate change on human and natural systems (e.g., damages to infrastructure from extreme weather)
- statistics measuring efforts to avoid the consequences of climate change (e.g., installation of solar power)
- statistics measuring efforts to adapt to the consequences of climate change (e.g., installation of residential air conditioning).

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The main objectives of the Statistical Committee in developing this road map are to:

- assist compilers of Armenia's national GHG inventory by assessing the usefulness of the official statistics for inventory compilation
- improve the quality of statistics used in the GHG inventory; for example, based on the recommendations of inventory review reports
- analyze the statistical needs related to the Kyoto Protocol and other global or regional agreements on climate change, and
- ensure the provision of new data to meet the needs of climate change analysts.

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Armenia's priorities for the development of climate change-related statistics are presented in the tables bellow. The priorities are structured around the 9 main CES recommendations:

• NSOs must improve data and statistics required for GHG inventories

• NSOs, especially Annex I Parties, should proactively reach out to agencies responsible for greenhouse gas inventories and, ideally, be considered official institutions in the national systems of greenhouse gas inventories

• the international statistical community should take an active role in contributing to the global GHG inventory system

• NSOs must improve the contribution of official statistics to climate change analysis by, for example, facilitating access to data

• the usefulness of existing environmental, social and economic statistics for climate change analysis should be improved

• NSOs should consider development of new statistics based on a review of the key data needs of climate change policy makers and analysts in their country

• existing classification systems, registers, definitions, statistical frameworks, products and services need to be reviewed to see that needs related to climate change analysis are appropriately addressed

• statisticians should gradually develop new partnerships, expertise and ability to adopt new methodologies for producing climate change-related statistics, and

• organizational changes may be needed in NSOs, the national statistical system and the national system for greenhouse gas inventories to support the production of climate change-related statistics.

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Priority 1 - Improved statistics for the national GHG emission inventory
Table 1.1. Summary of actions and expected results related to Priority 1

Gaps identified	• Employees of the Statistical Committee are not well enough informed about the use of official statistics in the national GHG inventory • Support for the application of consistent methodologies in administrative data is insufficient • Access to administrative data is inadequate
Actions to be taken	• Discussions with heads of departments of Statistical Committee of R A (SC RA) • Review of administrative data with the GHG inventory compilers • Introduction of new administrative data	• Revision and standardization of climate change-related statistics • Monitoring of compliance with statistical procedures and rules • Standardization of release schedules and processes for statistics
Responsible bodies	• SC RA	• Government departments and agencies • GHG inventory compilers
Deadlines	• Regular	• 2-3 years
Expected outputs	• Better-informed employees • Broader involvement of stakeholders in the maintenance of administrative data	• Expanded range of high-quality statistics for GHG inventory compilation • Improved administrative data

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Table 1.2. Details of actions and expected results related to Priority 1

		CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
1.1		Enhance awareness in the national statistical systems of how official statistics are or could be used for GHG inventories	Discussions with the heads of divisions of the Statistical Committee on the importance of climate change-related statistics	Statistical Committee	GHG inventory compilers
1.2		Ensure that GHG inventory calculations use existing official statistics as much as possible	Close cooperation with the Statistical Committee units responsible for CC statistics and state governmental bodies to ensure the full implementation of the necessary indicators, and, if necessary, the development of additional indicators	Members of State Council on Statistics GHG inventory compilers	State governmental bodies
1.3		Improve the quality of official statistics used for GHG inventories	For comparability and quality assurance, implement periodic monitoring of the use of uniform methodologies, classifications in administrative information databases	Statistical Committee of RA	State governmental bodies GHG inventory
	1.3.1	Improve coherence of GHG inventories and official statistics where possible	Active support from the RA State Council on Statistics for the preparation and approval of administrative statistical reporting forms in public administration bodies	Statistical Committee	State governmental bodies GHG inventory
	1.3.2	Improve the quality of energy statistics	The Statistical Committee has to participate in compiling the energy balance of Armenia and help ensure its timely and complete publication	Statistical Committee	Ministry of Energy Infrastructure and Natural Resources

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	1.3.3	Fill gaps related to, among others, the agriculture, forestry and other land use sector	Develop and put into circulation: - Reporting form for register and use of agricultural waste (in particular, manure) - Reporting form on firewood use by households; - Reporting form for household alternative production and use (primarily bioenergy)	State Council on Statistics	Communities International investors Ministry of Agriculture of RA, Municipalities
	1.3.4	Improve data on waste and the production of heat and electricity for own use and from renewable energy sources	Carry out comparative analysis between annual summary reports and summary data of annual household surveys conducted by the Statistical Committee	Statistical Committee	Inspectorate of Environment and Mining Municipalities
	1.3.5	Improve the timeliness of activity data	Provision of methodology for information collection and delivery	GHG inventory compilers Municipalities	Inspectorate of Environment and Mining
	1.3.6	Build longer and more consistent time series of official statistics	Periodic publication of relevant information on the Statistical Committee's website, ensuring accessibility	State Council on Statistics	GHG inventory compilers
1.4		Draft, together with the agencies responsible for GHG inventories, a prioritized list of national data gaps and a road map on data development to improve the national GHG inventory	Assist in compiling those parts of Armenia's climate change reports that are information related	MNP Statistical Committee	GHG inventory

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Prioritee 2 – Increase the Statistical Committee's role in the GHG inventory production system

<u>Table 2.1. Summary of actions and expected results related to Priority 2</u>

Gaps identified	• **Insufficient involvement of statistics in GHG inventory compilers Information System** • **Insufficient involvement in GHG calculation** • **Insufficient involvement in GHG information quality monitoring**	
Actions to be taken	• Active and practical participation in the certification processes of GHG information sources	• Permanent involvement in the working groups of GHG inventory information sources certification
Responsible bodies	• Statistical Committee • Members of State Council on Statistics • Coordinating environmental sphere	• MNP • GHG inventory compilers
Deadlines	• Ensuring permanent involvement	• Ensuring permanent involvement
Expected outputs	• Required quality of information	• Effective cooperation

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Table 2.2. Details of actions and expected results related to Priority 2

	CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
2.1	Facilitate collaboration between the statistical system and national inventory system	Active participation in development of indicators, data collection, generalization, provision and other similar practical work	Statistical Committee	Ministries MNP GHG inventory compilers
2.2	Create a national working group between the NSO, the GHG inventories agencies and other relevant organizations	Establish an informal working group in the Statistical Committee's system to ensure the collection of climate change-related statistics by its units Identify and provide training to contact persons in subdivisions of the Statistical Committee dealing with GHG inventory and involve them in relevant works on the provision with necessary information	Statistical Committee	GHG inventory compilers
2.3	Clarify the NSO's role in providing statistics and assist, as needed, in GHG inventory calculations	Thematic targeted discussions between the Members on State Council on Statistics and the GHG inventory compilers Discussions on the quality and integrity of data, organized by the Members of State Council on Statistics and with the participation of the representatives of other structures	Statistical Committee	GHG inventory compilers
2.4	Support efforts at strengthening the quality of GHG inventories in line with the IPCC's guidelines on quality control and quality assurance	Make speeches and discuss topics on the quality of information at the plenary and/or working group sessions	Statistical Committee	GHG inventory

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Priority 3 – Increase and deepen cooperation with international statistical community on climate change-related statistics

Table 3.1. Summary of actions and expected results related to Priority 3

Gaps identified	• **Lack of involvement of the Statistical Committee of RA in local adaptation of international organizations' requirements** • **Lack access to international experience and practice for the Statistical Committee of RA**	
Actions to be taken	• Study of the requirements of international non-statistical organizations • Implement statistical works in accordance with these requirements	• Study the requirements of international non-governmental organizations • Compliance with their requirements • Proper knowledge of international organizations' requirements and, where necessary, local adaptation of them
Responsible bodies	• Statistical Committee • International organizations	• Statistical Committee • International organizations
Deadlines	• On-going	• On-going
Expected outputs	• Locally adapted international requirements	• Locally adapted requirements

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Table 3.2. Details of actions and expected results related to Priority 3

CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
3.1 Seek closer collaboration between the statistical community and international organisations working on climate issues	• Continuously follow the actions and requirements of the relevant international organizations and match them with local functions • Request international organizations to provide active cooperation and support	• State Council on Statistics	• International organisations

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Priority 4 – NSOs must improve the contribution of official statistics to climate change analysis by, among other things, facilitating access to existing statistics

Table 4.1. Summary of actions and expected results related to Priority 4

Gaps identified	Inadequate involvement in preparation of climate change-related reports and assessments	
Actions to be taken	• Review the demand for analysis and reports on climate change • Preparation of new data for use in analysis • Discussions in Public Council on Users of Official Statistics	• Demand study • Preparation of new information for analysis; • Discussions in Public Council on Users of Official Statistics • Active participation of statisticians in the preparation of analysis and reports • Preparation of general-purpose statistical analysis
Responsible bodies	• State Council on Statistics	• State Council on Statistics
Deadlines	• If necessary practical involvement	• If necessary practical involvement • Ensuring permanent involvement
Expected outputs	• Qualitative analysis in climate change-related system • Participation in the preparation of other analysis and estimations • Information required for analysis and reports	• Qualitive analysis in climate change-related system • Participation in the preparation of other analysis and estimations • Effective cooperation • Qualitative and comprehensive statistics • Various statistical analyses

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Table 4.2. Details of actions and exected results related to Priority 4

CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
4.1 Create national forums or events for discussions between users and producers of climate change statistics	• Active participation in sessions of Public Council on Users of Official Statistics, Inter-agency Council on Climate Change, international and local climate change-related forums, presenting reports to identify data demands and the means of meeting them	• Statistical Comittee • Relevant members of State Council on Statistics	• Organizations implementing relevant events
4.2 Provide access to climate change-related statistics and indicators (including scientific data collected by others) using NSOs' dissemination channels	• Assistance in improving access to administrative registers • Support to administrative registers to provide stakeholders with free access to their websites, publications • Acquisitions resulting from discussions with administrative bodies on the publication of their administrative information on their sites • An agreement with the administrative registers to ensure the publishing of microdata by them	• Statistical Committee	• Governing bodies • GHG inventory compilers

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Priority 5 – The usefulness of existing environmental, social and economic statistics for climate change analysis should be improved

Table 5.1. Summary of actions and expected results related to Priority 5

Gaps identified	• **Insufficient effort to collect missing information with statistical agencies** • **Infrequently updated databases for climate change impact assessment** • **Insufficient use of geographic information systems (GIS) in land management**	
Actions to be taken	• Intensify cooperation with governing bodies for the full inclusion of CC indicators in statistical work programs • Initiation widespread use of GIS statistical analysis	• Initiate cooperation for inclusion of all climate change indicators in statistical work programs • Introduce GIS in analytical and assessment publications
Responsible bodies	• Statistical Committee	• Statistical Committee
Deadlines	• 2-3 years	• 2-3 years
Expected outputs	• Have high quality and complete CC data in both official and administrative registers • Introduction of GIS system	• Qualitative statistical databases in climate change assessment system • Introduction of GIS system

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Table 5.2. Details of actions and expected results related to Priority 5

CES Recommendation		Actions to be taken	Primary responsible bodies	Co-responsible bodes
5.1	Review statistical programs and data collections from the viewpoint of the data needs of climate change analysis and indicators	• Review stakeholders' needs to adjust the range, volume, quality, tools and mechanisms of current and planned annual statistical surveys • Ensure stakeholders' need are met before making final decisions as to content of annual statistical surveys	• Statistical Committee	Governing bodies GHG inventory compilers
5.2	Address the difficulties in matching data from different statistical domains	• Provide effective practical cooperation between statistical divisions • Ensure access to information needed to assess the impact of CC	• Statistical Committee	
5.3	Geo-reference all relevant data to support analysis of the spatial dimension of data linked to climate change	• Ensure extensive use of GIS system in estimating processes	• Statistical Committee • International and donor organisations	Governing bodies Administrative statistical registers
5.4	Produce statistics for new geographical areas	• Enhance cooperation with other bodies to create statistical databases for river basin management bodies; for example, soil erosion databases of the Ministry of Agriculture and databases of the State Water Economy Committee on water abstraction and water use.	• State Council on Statistics • International and donor organisations	Administrative statistical registers

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Priority 6 – NSOs should consider development of new statistics based on a review of the key data needs of climate change policy makers and analysts in their country

Table 6.1. Summary of actions and expected results related to Priority 6

Gaps identified	Inadequate accounting of expenditures related to environmental protection	
Actions to be taken	• Introduction of environmental protection expenditure accounts • Expanded environmental accounts for air, water, land, etc.	• Introduction of environmental protection expenditure accounts • Expanded environmental accounts including all environmental spheres (air, water, soil, etc.)
Responsible bodies	• Statistical Committee	• Statistical Committee
Deadlines	• Three years, on-going	• Three years, on-going
Expected outputs	• Environmental expenditure accounts • Expanded environmental accounts	• Environmental expenditure accounts • Expanded environmental accounts

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Table 6.2. Details of actions and expected results related to Priority 6

	CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
6.1	Improve data for analyzing drivers of climate change	• Introduction of environmental satellite accounts in the national accounting system in Armenia. As a first step, introduce a comprehensive system of environmental-economic accounting	• Statistical Committee	• International donor institutions • Administrative statistical registers
6.2	Develop statistics on the use of economic instruments	• Development of environmental protection expenditure accounting	• Statistical Committee	• Governing bodies
6.3	Develop statistics to address climate change adaptation	• Assist government bodies in development and implementation of climate change adaptation statistics • Assist state bodies in the formulation of adaptation statistics	• Statistical Committee	• Governing bodies
6.4	Consider how to contribute to the on-going efforts to monitor biodiversity and ecosystems	• Participation in development of information management issues in biodiversity programs, and methodological assistance in the implementation of accounting systems • Assistance to the Biodiversity Agency of the Ministry of Nature Protection of RA to develop statistical reporting forms.	• Statistical Committee	• MNP Biodiversity Agency

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Priority 7 – Existing classification systems, registers, definitions, statistical frameworks, products and services need to be reviewed to see that needs related to climate change analysis are appropriately addressed

Table 7.1. Summary of actions and expected results related to Priority 7

Gaps identified	• **Insufficient monitoring of the management the national GHG inventory information management systems** • **Insufficient coordination between different databases**	
Actions to be taken	• Participation in of EU-funded Shared Environmental Information System project • Creation of an eco-portal	• Participation in of EU-funded Shared Environmental Information System project • Creation of an eco-portal
Responsible bodies	• Statistical Committee • relevant members of State Council on Statistics	• Statistical Committee • relevant members of State Council on Statistics
Deadlines	• 2-3 years	• 2-3 years
Expected outputs	• Shared Environmental Information System	• Shared Environmental Information System

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Table 7.2. Details of actions and expected results related to Priority 7

	CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
7.1	Give consideration in future revisions of international statistical standards and classifications to the data needs of climate change analysis	• Participation in the information management system of biodiversity implemented by the Ministry of Nature Protection of the Republic of Armenia, their compliance with international and national requirements. • Identify gaps in the biodiversity statistics and develop programs to improve these statistics	• Statistical Committee	MNP
7.2	Identify and address the obstacles to linking statistics across domains	• Training on the importance of cooperation between subdivisions of the Statistical Committee.	• Statistical Committee	MNP
7.3	Consider new approaches to preserving confidentiality	• Support integration of relevant administrative registers and their dissemination and accessibility	• Statistical Committee	GHG inventory compilers Ministries Legal entities
7.4	Consider the inclusion of explicit references to environmental statistics, including climate change-related statistics, in statistical laws	• Discuss the issue of publication of nominal information in interdepartmental commission sessions • Taking into consideration the specific nature of ecological problems, discuss this issue in the RA State Council on Statistics	• Statistical Committee • State Council on Statistics •	GHG inventory compilers Ministries Legal entities

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Priority 8 – Statisticians should gradually develop new partnerships, expertise and ability to adopt new methodologies for producing climate change-related statistics

Table 8.1. Summary of actions and expected results related to Priority 8

Gaps identified	• **Lack of environment-related and other education** • **Lack of skills/knowledge assessments and self-evaluations** • **Insufficient knowledge of CC activities in Armenia**	
Actions to be taken	• Training workshops for Statistical Committee staff • Assistance in preparation of climate change-related skills/knowledge assessment and self-evaluation reports	• Training workshops for the Statistical Committee staff • Assistance in preparation of climate change-related skills/knowledge assessment and self-evaluation reports
Responsible bodies	• Statistical Committee • Relevant members of State Council on Statistics	• Statistical Committee • Relevant members of State Council on Statistics
Deadlines	• Regular	• Regular
Expected outputs	• Better trained staff	• Better trained staff

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Table 8.2. Details of actions and expected results related to Priority 8

CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
8.1 Build knowledge and understanding of the natural sciences among NSO staff	• Training seminars on possible changes required for transition to new methodologies for the Statistical Committee's staff	• Statistical Committee • Relevant members of State Council on Statistics	MNP GHG inventory compilers
8.3 Develop knowledge, methodologies and tools for producing and using geo-referenced data across the statistical system	• Employ GIS in relevant publications • GIS training courses	• Statistical Committee • Relevant members of State Council on Statistics	International sponsors Stakeholders
8.4 Ensure the effective transfer of knowledge and skills among NSOs internationally	• Participate in international events to share Armenia's experience	• Statistical Committee - Relevant members of State Council on Statistics	

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Priority 9 – Make organizational changes in the Statistical Committee, the broader national statistical system and the national system for greenhouse gas inventories to support the production of climate change-related statistics

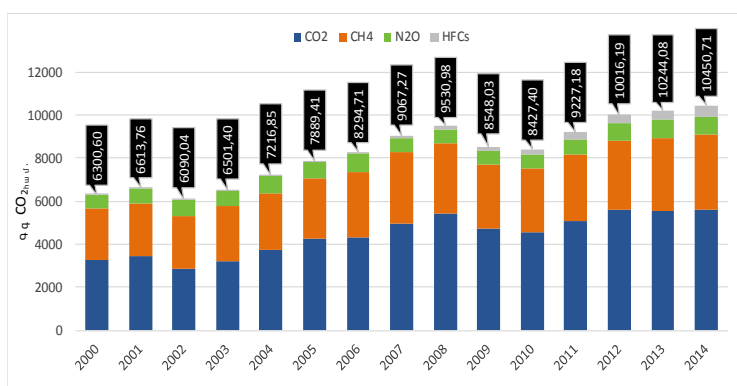### Table 9.1. Summary of actions and expected results related to Priority 9

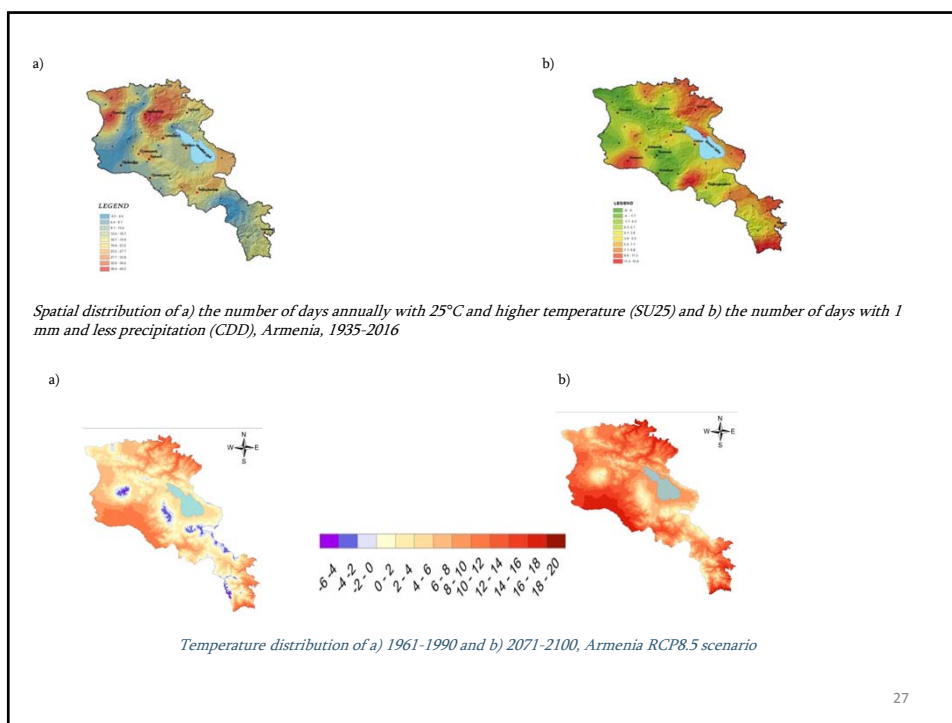| Gaps identified	• Lack of strategy for improvement of climate change-related statistics	
Actions to be taken	• Include provisions relating to climate change-related statistics in the five-year strategic programs of the statistical Committee	• Include provisions relating to climate change-related statistics in the five-year strategic programs of Statistical Committee
Responsible bodies	• Statistical Committee • Relevant members of State Council on Statistics	• Statistical Committee • Relevant members of State Council on Statistics
Deadlines	• Regular	• Regular
Expected outputs	• Improved climate change-related statistics	• Improved climate change-related statistics

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Table 9.2. Details of actions and expected results related to Priority 9

	CES Recommendation	Actions to be taken	Primary responsible bodies	Co-responsible bodes
9.1	Assign a person or group with the responsibility for ensuring the quality and availability of climate change-related statistics	Hold working discussions with the corresponding specialists of administrative registers on the issues of selecting responsible specialists for improving CC-related statistics	Statistical Committee of RA	GHG inventory compilers governing bodies
9.2	Modify, in the longer term, the NSO's organizational structure	Discussions in the sessions of State Council on Statistics on the formation of new administrative databases, selection of new formats for summaries and publications, etc. These may arise in connection with the global changes in the state or administrative management system, changes in the administrative subordination of the administrative registries and other reasonable reasons.	Statistical Committee of RA	Ministries Legal entities GHG inventory compilers
9.3	Define and clarify, if needed, the division of work and responsibilities between the different producers of climate-change related statistics and GHG inventories	Improvement of cooperation framework and content within the Statistical Committee's system and beyond its competence Establishment of new contractual relationships, publication of relevant targeted references in shared system, etc.	Statistical Committee of RA	Ministries Legal entities GHG inventory compilers
9.4	Earmark sufficient resources for the development of environmental statistics and climate change-related statistics	Discuss distribution and redistribution of statistical resources through to possible administrative or other changes	Statistical Committee of RA	Governing bodies International and donor organisations

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Spatial distribution of a) the number of days annually with 25°C and higher temperature (SU25) and b) the number of days with 1 mm and less precipitation (CDD), Armenia, 1935-2016

Temperature distribution of a) 1961-1990 and b) 2071-2100, Armenia RCP8.5 scenario

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THANK YOU

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