

D4.7: FINAL DATA MANAGEMENT PLAN

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Addressing revision comments

Comment	Response
General comment: This version of the deliverable can not be accepted as the final DMP. It should mainly explain how the data will be managed after the project duration (legacy of the project, eg “the web catalogue service that will be built and maintained after the project competition”) and should also	Elaboration of a newer section 2.1 entitled as “2.1 Data Assets and Preservation Procedures” to make an overview of the generated open data and also, to provide an

<p>provide an update on the latest version of the DMP (the revised version of D4.10 – submitted May 2019) explaining the status of data management at the end of the project, including an overview of which datasets are already made openly available at the end of the project (as mentioned in the Periodic Technical Report – Task 4.8 progress). Several parts are just a copy paste of the first version of the D4.10 (eg section 4.2), not taking into account the comments from the previous review (eg to exclude irrelevant sections such as 2. Background on SIM4NEXUS DMP and 8. Q&A on FAIR data).</p>	<p>overview of the preservation strategy.</p> <p>Revision of the entire document and removal of all inconsistencies and unnecessary sections (Section 2, Section 8)</p> <p>Removal of unnecessary outdated information.</p>
<p>The executive summary and short summary of results should be updated, reflecting that this is the final version of the DMP and also mention which content has been included/updated compared to the previous version (D4.10 - revised version after the second review, submitted May 2019). Sentences like “It is a Living Document with iterations along the entire project timespan (M12, M30 and M48 –this one–). An updated version ...” should be deleted in this final version.</p>	<p>The executive Summary has been updated, including a final part reflecting the changes against the last presented version of the DMP.</p>
<p>Some sections are not relevant in the final version of the DMP: section 2, section 3.7.1 Internal Project Use ?</p>	<p>We revised the entire document and remove all typos, ambiguities and unnecessary sections.</p>
<p>Following sections need to be updated:</p> <p>4.2 Making data openly accessible:</p> <ul style="list-style-type: none"> a. explain which datasets have been already made openly accessible and in which repositories; which ones are kept closed and why; b. Legacy: D4.10 pg 21 and D4.7 4.2.3 refer to “To ensure archiving and preservation of long-tail research data during the project, a repository with a web catalogue service will be built and maintained after the project competition. The Web Catalogue Services provides the system with a smarter interface to the SIM4NEXUS repository (geo-database).”: please explain the current status and how this will be implemented? <p>4.3 and 4.4 – still mentions “This section will be updated on next iterations ...”?</p>	<p>Elaboration of a newer section 2.1 entitled as “2.1 Data Assets and Preservation Procedures” to make an overview of the generated open data and also, to provide an overview of the preservation strategy.</p> <p>In terms of data preservations, we also added the following paragraph: “Based on the deployment of these tools in EPSILON servers, data will be preserved during 5 years after the project ends. Moreover, it is the commitment of having these tools online available through 2-3 years before the project ends. This duration is considered in the worst case the exploitation of the tools does not receive any income to continuous their maintenance. Finally, this data maintenance also covers potential bug fixing in collaboration with EUT. After 5 years after project ends and if the SIM4NEXUS initiative disrupt, the data will be removed according to</p>

	<p>the GDPR regulation, removing all copies of data and also all personal information stored by the game.”</p>
Editorial comments: please include page numbers and links to the pages in the Table of Contents	Done in both, the PDF and the WORD Document.

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Glossary / Acronyms

TERM	EXPLANATION / MEANING
CA	Consortium Agreement
CSW	Catalogue Service for the Web
DAP	Data Access Protocol
DESCA	Consortium Agreement Model
DMP	Data Management Plan
DoA	Document of Action
ERC	European Research Council
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reused
GA	Grant Agreement
GDPR	General Data Protection Regulation
HTTP	Hypertext Transfer Protocol
IaaS	Infrastructure as a Service
IPR	Intellectual Property Rights
ISO	International Standards Organization
JSON	JavaScript Object Notation
KEE	Knowledge Elicitation Engine
OA	Open Access
OGC	Open Geospatial Consortium
ORD	Open Research Data Pilot
RESTful	Representational State Transfer
SDI	Spatial Data Infrastructure
SRTM	Shuttle Radar Topography Mission
USGS	United States Geological Survey
WCS	Web Coverage Service
WMS	Web Map Service
WFS	Web Feature Service
WP	Work Package
XML	eXtensible Markup Language

Executive Summary

This document presents the final Data Management Plan (DMP) on open access data handling (see box 1) defined for SIM4NEXUS project. The aim of the document is to consider the many aspects of data management, data and metadata generation, data preservation- maintenance- and analysis, whilst ensuring that data is well managed at present and prepared for preservation in the future. This Data Management Plan is compiled according to the [Guidelines on FAIR Data Management in H2020¹](#), and the Guidelines to the Rules on the [Open Access to Scientific Publications and Open Data Access to Research Data in H2020²](#).

Thus, the sections below present the lifecycle, responsibilities, review processes and management policies of research data, produced during the execution of SIM4NEXUS. The DMP reflects the agreement of the SIM4NEXUS consortium as well as the adopted measures concerning the control, protection, distribution and maintenance of the produced data.

For SIM4NEXUS, the DMP is defined as “the development, execution and supervision of plans, policies, programmes and practices that control, protect, deliver and enhance the value of data and information assets” obtained. Since the beginning of the project, the following processes and procedures for data management procedures are established:

- Data governance, such as standards management and guidelines
- Data architecture, analysis, and design including data modelling
- Data maintenance, administration, and data mapping across building blocks and solution modules
- Data security management including data access, archiving, privacy, and security
- Data quality management including query management, data integrity, data quality, and quality assurance
- Reference and master data management including data integration, external data transfer, master data management, reference data
- Document, record, and content management
- Metadata management, i.e., metadata definition, discovery, publishing, metrics, and standardization.

Considering previous versions of the DMP, this version includes the following major changes:

- Definition of a section to overview all data assets generated within the project including their specific preservation plans.
- Update of the licensing of the data assets.
- Minor updates about the agreements of IPR, cost calculations of data maintenance and citation procedures.
- Removal of non-required sections for the final Data Management Plan reporting.

Box 1: Open Access

Open access (OA) refers to the practice of providing online access to scientific information that is free of charge to the end-user and reusable. 'Scientific' refers to all academic disciplines. In the context of research & innovation, 'scientific information' can mean: (1) peer-reviewed scientific research articles (published in scholarly journals) or (2) research data (data underlying publications, curated and raw data).

¹ http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

² http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

Changes with respect to the DoA

Two Deliverables have been added, D4.10 and D4.11. Both are updated versions of the Data Management Report delivered on Month 6. Before the final Deliverable in month 48 it was decided to deliver an intermediate Updated Version on month 30 (D4.10) and then the Final one (D4.11- covering D4.7) at the end of the project (month 48). No further changes with respect to the DoA.

Dissemination and uptake

The deliverable is publicly available, based on the participation of SIM4NEXUS to the Pilot on Open Research Data in Horizon 2020³. Special attention will be paid to how personal data will be properly catered together with other important data and/or scientific information, following General Data Protection Regulation (GDPR) (EU) 2016/679.

Short Summary of results (<250 words)

As SIM4NEXUS participates in the Pilot on Open Research Data in Horizon 2020, a DM report was submitted in the first 6 months of the project. This document aims to improve and maximise open access and re-use of research data generated by project actions. Participating in the Open Research Data Pilot does not necessarily mean opening all research data. In a sense, the document determines and explains which of the research data generated and/or collected will be made open. In this update, the first open access data release is described. Several iterations of this document will be released as project evolves.

Evidence of accomplishment

The deliverable itself can act as the evidence of accomplishment. In addition, communication (Teleconferences, emails) between EURECAT, EPSILON and the project Coordinator (WUR) can be revealed as evidence.

³ According to article 43.2 of Regulation (EU) No 1290/2013 of the European Parliament and of the Council, of 11 December 2013, laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006.

1. Introduction

1.1 Scope

This document describes the SIM4NEXUS Final Data Management Plan (DMP, see box 2) that corresponds to the Deliverable D4.7 of the SIM4NEXUS Technical Annex. The DMP provides a description of how the research data collected, processed, and generated is handled during the project but also, how it will be maintained after the SIM4NEXUS. This final situation of the DMP describes the SIM4NEXUS consortium agreement about the data plan and also a description of the main standards and methodologies that has been established for data collection, generation, sharing and preservation.

The document follows the template provided by the European Commission on DMP⁴. The DMP is prerequisite for SIM4NEXUS as it participates in the Open Research Data Pilot⁵ since the initial version of the deliverable presented at early stage of the project (Month 6).

This final version of the DMP reflects the agreements of the consortium regarding how data has been managed in SIM4NEXUS and also, the procedures and mechanism to preserve data beyond SIM4NEXUS.

Box 2: Data Management Plan

A Data Management Plan (DMP) is a key element of good data management; it describes the data management life cycle for the data to be collected, processed, and generated by a Horizon 2020 project.

As part of making research data findable, accessible, interoperable, and re-usable (FAIR), a DMP should include information on: (i) the handling of research data during and after the end of the project, (ii) what data will be collected, processed, and generated, (iii) which methodology and standards will be applied, (iv) whether data will be shared/made open access, and (v) how data will be curated and preserved (including after the end of the project). A DMP is required for all projects participating in the extended ORD pilot unless they opt out of the ORD pilot; however, projects that opt are encouraged to submit a DMP on voluntary basis.

1.2 Structure of the document

DMP deliverable is organized as follows:

- Section 1 is the introductory chapter, which provides the scope of the deliverable
- Section 3 contains information on digital data sets generated or collected in SIM4NEXUS for each Work Package and also, preservation data mechanism established in SIM4NEXUS.
- Section 4 contains information of FAIR data for SIM4NEXUS and will be updated as the project evolves
- Section 5 addresses issues related to data security & ethical aspects

⁴ Guidelines on Data Management in Horizon 2020,

http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

⁵ Open Access to Scientific Publications and Research Data in Horizon 2020 Guidelines,

https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

2. Data Summary – Specifics

The final version of the DMP has the intention to present the data strategy and procedures adopted in SIM4NEXUS project but also, the data preservation and management after the project ends. For that, this part of the document presents the data management of the Work Packages.

The information listed below reflects the conception and design of the individual Work Packages at month 48 of the Project (May 2020) when datasets from the different demo cases (Sardinia, Greece, UK, Azerbaijan, Netherlands and Sweden) have been collected. For all the demo-cases, it has been generated the corresponding models in order to feed the serious game with the needed intelligence about the policies and the nexus variables evolution. Since the beginning of the operational phase of the project (June 2016), the data collection and generation has been guided through a fast track application that started by Sardinia case study and continuous progressively with the rest of the case-studies (Greece, UK, Azerbaijan, Netherlands and Sweden).

The objective of the fast track was aimed to:

1. Identify difficulties related to datasets collection from the different stakeholders and projects to run models and have a comprehensive view of all nexus components in the area.
2. Identify the obstacle and find solution to harmonize data at level of scale and spatial distribution.

After the initial fast track application (in Sardinia Case-Study), SIM4NEXUS developments were started for all the rest case studies. In month 30 of the Project (November 2018), the climate data (historic and scenarios) were produced and collected for all the case studies (except the European and the Global ones). Furthermore, model outputs were produced for Sardinia, Greece, UK, Azerbaijan, Netherlands and Sweden. At month 48 of the project, the models were fully completed for the rest of the demo-cases including Latvia, Germany-France, Sweden, Germany-Czech Republic-Slovakia, European and Global. EPISILON, as a data manager, managed all the data used for the project implementation. The information flow is depicted in the following flowchart (Figure 2):

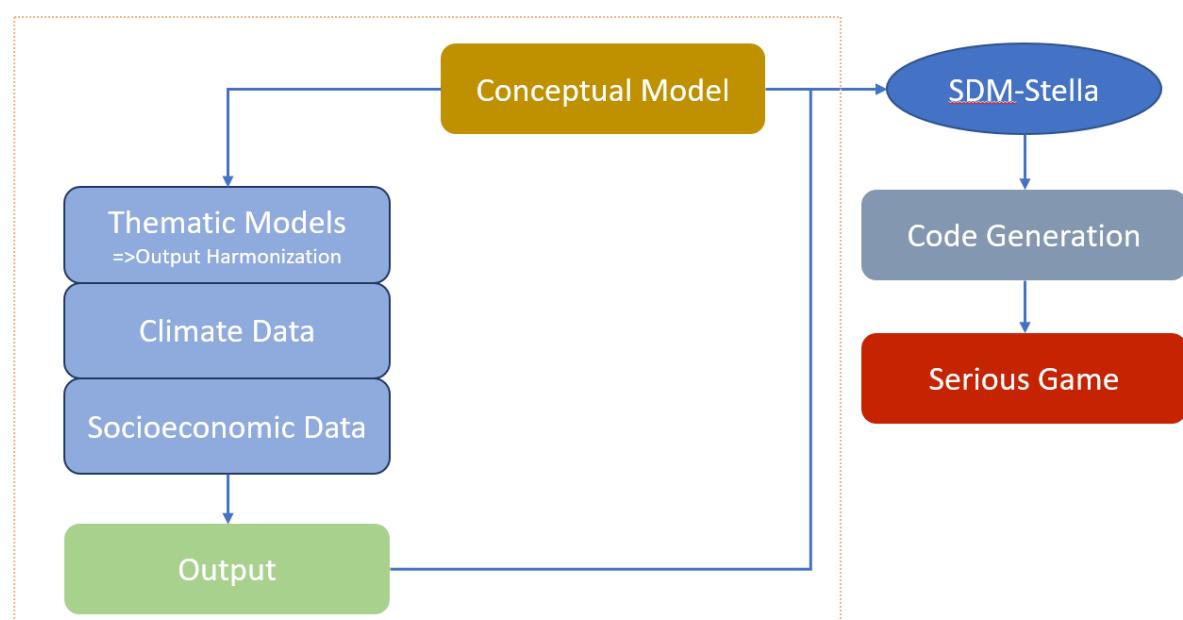


Figure 1 . Information flow

All the case studies developed a complexity science model at a conceptual stage (Conceptual Model) to show interlinkages and synergies among the NEXUS components. This is developed at a higher level of integration and a lower level of detail, as needed, for WP4. Then, the conceptual model is transformed into a System Dynamics Model (SDM) -STELLA model which is fed with **climate data and data provided by the thematic models and the case studies** (derived from national Authorities, or organizations, institutes, or programs, like Eurostat, GISCO, MODIS, GEOSS, INSPIRE, meteorological stations, JRC/CORINE, NASA, USGS, Google). The SDM has been translated into a Python Script to integrate the models into the Serious Game. Thus, the output of the Python Scripts and the subsequent information has been integrated under the Serious Game backend and visually transformed this information into a Gamified GUI (Serious Game - SG).

EPSILON has been responsible to communicate with the WP Leaders, co-Leaders, case study leaders and thematic model developers and collect the required information. Assigned people for reporting and updating the above-mentioned datasets are shown in the following tables.

Table 1 . WP (co-) Leaders Assigned persons

WP	Assigned person
WP1	Chrysi Laspidou (WP leader) / Mark Howells (WP co-leader)
WP2	Maria Witmer (WP leader) / Janez Sušnik (WP co-leader)
WP3	Lydia Vamvakaridou (WP leader) / Maria Blanco (WP co-leader)
WP4	Xavier Domingo (WP leader) / Marc Bonazountas (WP co-leader)
WP5	Floor Brouwer (WP leader) / Maïté Fournier (WP co-leader)
WP6	Alexandre Bredimas (WP leader) / Chengzi Chew (WP co-leader)
WP7	Guido Schmidt (WP leader) / Frank Wechsung (WP co-leader)
WP8	George Beers (WP leader)

Table 2 . Case Study Assigned persons

Case Study	Assigned Person (Institution)
Andalusia	Maria Blanco and Pilar Martinez (UPM)
Sardinia	Simone Mereu and Antonio Trabucco (UNISS)
UK	Matthew Griffey and Lottie McKnight (SWW)
Netherlands	Vincent Linderhof and Nico Polman (WUR-LEI)
Sweden	Malgorzata Blicharska and Claudia Teutschbein (UU)
Greece	Chrysi Laspidou, Alexandra Spiropoulou and Maria Papadopoulou (UTH)
Latvia	Ingrida Bremere and Daina Indriksone (BEF)
Azerbaijan	Georgios Avgerinopoulos and Eunice Pereira Ramos (KTH)
France-Germany	Maïté Fournier (ACT)
Eastern Germany, Czech Republic and Slovakia	Tobias Conradt, Jan Pokorny and Michal Kravčík (PIK, ENKI and P&W)
EUROPE	Jason Levin-Koopman (WUR-LEI)
GLOBAL	Jonathan Doelman (PBL)

Table 3. Thematic Modes Assigned Persons

Model	Assigned Person (Institution)
E3ME	Eva Alexandri (CE)

MAGNET	Jason Levin-Koopman (WUR-LEI)
CAPRI	Maria Blanco (UPM)
IMAGE-GLOBIO	Jonathan Doelman/Jan Janse (PBL)
OSEMOSYS	Georgios Avgerinopoulos (KTH)
SWIM	Tobias Conradt (PIK)
MAGPIE/ LPJML	Benjamin Bodirsky (PIK)

Considering the different assets and responsibilities in SIM4NEXUS, the purpose of this section is to provide an executive summary of the different SIM4NEXUS data addressing the following issues:

- Provide an Overview of data assets and their corresponding preservation procedures
- State the purpose of the data collection/generation
- Specify the types and formats of data generated/collected
- Specify if existing data is being re-used
- Specify the origin of the data
- State the expected size of the data
- Outline the data utility: to whom will it be useful
- Defines how this data is going to be accessible both for internal or public use

2.1 Data Assets and Preservation Procedures

This section is mainly devoted to specifying the data assets generated in each SIM4NEXUS work-package and the corresponding preservation procedures after the project ends. At this point, it is needed to remark that most of the information generated and produced under SIM4NEXUS have been published and make it openly accessible over Zenodo⁶ for datasets and timeseries. Complementing this information, most of the tools and data generators are also available openly for the community and scientist for their future use (code shared over Git-Gitlab- repositories). Therefore, **SIM4NEXUS is highly contribution to provide open-data information and data catalogues regarding the NEXUS**. Moreover, the project also **put in hands of the wider community a set of data and digital tools to better understand the NEXUS and the potential impacts** considering different time-frames and also different geographical territories.

Considering this information, the following table presents a data summary of all data assets elaborated and delivered through SIM4NEXUS:

⁶ <https://zenodo.org/search?page=1&size=20&q=SIM4NEXUS>

Table 4. Overview of the Datasets generated in SIM4NEXUS

#	Identifier/Name	Brief Description	Open Source	Repository	Additional Comments or Justification if not open source
1	DS-WP1-InventoryNexus	Dataset that corresponds to the inventory of the interlinkages of Water-Energy-Food-Land-Climate and Climate Change.	Yes	Proj.Web.Page	
2	DS-WP1-HD-Sardinia	Dataset of historic data as a base to elaborate the thematic models of Sardinia	Yes	Zenodo	
3	DS-WP1-HD-Greece	Dataset of historic data as a base to elaborate the thematic models of Greece	Yes	Zenodo	
4	DS-WP1-HD-Andalusia	Dataset of historic data as a base to elaborate the thematic models of Andalusia	Yes	Zenodo	
5	DS-WP1-HD-UK	Dataset of historic data as a base to elaborate the thematic models of UK	Yes	Zenodo	
6	DS-WP1-HD-Sweden	Dataset of historic data as a base to elaborate the thematic models of Sweden	Yes	Zenodo	
7	DS-WP1-HD-Netherlands	Dataset of historic data as a base to elaborate the thematic models of the Netherlands	Yes	Zenodo	
8	DS-WP1-HD-Azerbaijan	Dataset of historic data as a base to elaborate the thematic models of Azerbaijan	Yes	Zenodo	
9	DS-WP1-HD-Latvia	Dataset of historic data as a base to elaborate the thematic models of Latvia	Yes	Zenodo	
10	DS-WP1-HD-Germany-France	Dataset of historic data as a base to elaborate the thematic models of Germany-France	Yes	Zenodo	
11	DS-WP1-HD-Eastern Germany, Czech Republic and Slovakia	Dataset of historic data as a base to elaborate the thematic models of Eastern Germany, Czech Republic and Slovakia	Yes	Zenodo	
12	DS-WP1-HD-Europe	Dataset of historic data as a base to elaborate the thematic models of Europe case-study	Yes	Zenodo	
13	DS-WP1-HD-Global	Dataset of historic data as a base to elaborate the thematic models of the global/transbounday case-study	Yes	Zenodo	

14	TOOL-WP3-TM-Sardinia	Thematic model (E3ME, CAPRI) that corresponds to the case study of SARDINIA.	Yes	Zenodo	
15	TOOL-WP3-TM-Greece	Thematic model E3ME, MAGNET, CAPRI, GLOBIO) that corresponds to the case study of SARDINIA.	Yes	Zenodo	
16	TOOL-WP3-TM-Andalusia	Thematic model (E3ME, MAGNET, CAPRI) that corresponds to the case study of Andalusia.	Yes	Zenodo	
17	TOOL-WP3-TM-UK	Thematic model (E3ME, CAPRI) that corresponds to the cas study of UK.	Yes	Zenodo	
18	TOOL-WP3-TM-Sweden	Thematic model (MAGNET, CAPRI, GLOBIO) that corresponds to the case study of Sweden.	Yes	Zenodo	
19	TOOL-WP3-TM-Netherlands	Thematic model (E3ME, MAGNET, CAPRI) that corresponds to the cas study of the Neetherlands.	Yes	Zenodo	
20	TOOL-WP3-TM-Azerbaijan	Thematic model (E3ME, MAGNET, CAPRI, OSEMOSYS) that corresponds to the case study of Azerbaijan.	Yes	Zenodo	
21	TOOL-WP3-TM-Latvia	Thematic model (E3ME, MAGNET, CAPRI) that corresponds to the case study of Latvia.	Yes	Zenodo	
22	TOOL-WP3-TM-Germany-France	Thematic model (E3ME, CAPRI, SWIM) that corresponds to the case study of Germany-France.	Yes	Zenodo	
23	TOOL-WP3-TM-Eastern Germany, Czech Republic and Slovakia	Thematic model (CAPRI, SWIM) that corresponds to the case study of Eastern Germany, Czech Republic and Slovakia.	Yes	Zenodo	
24	TOOL-WP3-TM-Europe	Thematic model (E3ME, MAGNET, CAPRI, IMAGE, MAGPIE) that corresponds to the case study of Europe.	Yes	Zenodo	
25	TOOL-WP3-TM-Global	Thematic model (E3ME, MAGNET, CAPRI, IMAGE, MAGPIE) that corresponds to the Global case-study.	Yes	Zenodo	
26	TOOL-WP4-SDM-Sardinia	SDM model elaborated to interrelate nexus variables of SARDINIA	Yes	Zenodo	
27	TOOL-WP4-SDM-Greece	SDM model elaborated to interrelate nexus variables of Greece	Yes	Zenodo	
28	TOOL-WP4-SDM-Andalusia	SDM model elaborated to interrelate nexus variables of Andalusia	Yes	Zenodo	
29	TOOL-WP4-SDM-UK	SDM model elaborated to interrelate nexus variables of UK	Yes	Zenodo	

30	TOOL-WP4-SDM-Sweden	SDM model elaborated to interrelate nexus variables of Sweden	Yes	Zenodo	
31	TOOL-WP4-SDM-Netherlands	SDM model elaborated to interrelate nexus variables of Netherlands	Yes	Zenodo	
32	TOOL-WP4-SDM-Azerbaijan	SDM model elaborated to interrelate nexus variables of Azerbaijan	Yes	Zenodo	
33	TOOL-WP4-SDM-Latvia	SDM model elaborated to interrelate nexus variables of Latvia	Yes	Zenodo	
34	TOOL-WP4-SDM-Germany-France	SDM model elaborated to interrelate nexus variables of Germany-France	Yes	Zenodo	
35	TOOL-WP4-SDM-Eastern Germany, Czech Republic and Slovakia	SDM model elaborated to interrelate nexus variables of Eastern Germany, Czech Republic and Slovakia	Yes	Zenodo	
36	TOOL-WP4-SDM-Europe	SDM model elaborated to interrelate nexus variables of Europe	Yes	Zenodo	
37	TOOL-WP4-SDM-Global	SDM model elaborated to interrelate nexus variables of Global case-study	Yes	Zenodo	
38	TOOL-WP4-SG-Sardinia	Serious Game implemented and deployed for the case-study of Sardinia (fast-track).	Yes	EPSILON Gitlab	
39	TOOL-WP4-SG-Greece	Serious Game implemented and deployed for the case-study of Greece.	Yes	EPSILON Gitlab	
40	TOOL-WP4-SG-UK	Serious Game implemented and deployed for the case-study of UK.	Yes	EPSILON Gitlab	
41	TOOL-WP4-SG-Sweeden	Serious Game implemented and deployed for the case-study of Sweeden.	Yes	EPSILON Gitlab	
42	TOOL-WP4-SG-Netherlands	Serious Game implemented and deployed for the case-study of the Neetherlands).	Yes	EPSILON Gitlab	
43	TOOL-WP4-SG-Azerbaijan	Serious Game implemented and deployed for the case-study of Azerbaijan.	Yes	EPSILON Gitlab	
44	TOOL-WP4-SG-Latvia	Serious Game implemented and deployed for the case-study of Latvia.	Yes	EPSILON Gitlab	

45	TOOL-WP4-Naming Convention	The naming convention tool stores more than 10.000 different nexus variables identified in the case studies for the thematic models	Yes	EPSILON Gitlab	https://seriousgame.sim4nexus.eu/namingConvention/#/
46	TOOL-WP4-Semantic Repository	The semantic repository stores all gaming information and subsequent variables.	Yes	EPSILON Gitlab	https://seriousgame.sim4nexus.eu/semanticRepository/

Model output data have been collected along with the climatic data provided for historical time series, plus Representative Concentration Pathways scenarios (RCP2P6, RCP4P6, RCP8P0). A catalogue of all the available datasets is presented in Annex 1.

Considering the relevant data assets generated under SIM4NEXUS, it is noticeable the high contribution to the scientific community and the piloting research with high reliable data published. These aspects will sustain the future investigations in the nexus and permit EU to have a relevant presence in this research.

Considering the 46 data assets produced, it is the intention of the consortium to maintain it after the project completion in order to maintain the high quality of data. Based on this, there is the intention of the SIM4NEXUS consortium to maintain update the models 2-3 years more according to the tasks depicted in the following table:

Table 5. Maintenance & Data preservation of the Data Assets

#	Identifier/Name	Responsible Partner	Maintenance & Data Preservation Plan (2-3 years)
1	DS-WP1-InventoryNexus	UTH	No need. This is a catalogue based on specific project study and analysis.
2	DS-WP1-HD-Sardinia	UNISS	Update the information once a year with the corresponding information.
3	DS-WP1-HD-Greece	UTH	Update the information once a year with the corresponding information
4	DS-WP1-HD-Andalusia	UPM	Update the information once a year with the corresponding information
5	DS-WP1-HD-UK	SWW	Update the information once a year with the corresponding information
6	DS-WP1-HD-Sweden	UU	Update the information once a year with the corresponding information
7	DS-WP1-HD-Netherlands	WUR-LEI	Update the information once a year with the corresponding information
8	DS-WP1-HD-Azerbaijan	KTH	Update the information once a year with the corresponding information
9	DS-WP1-HD-Latvia	BEF	Update the information once a year with the corresponding information
10	DS-WP1-HD- Germany-France	ACT	Update the information once a year with the corresponding information
11	DS-WP1-HD- Eastern Germany, Czech Republic and Slovakia	PIK, ENKI & P&W	Update the information once a year with the corresponding information
12	DS-WP1-HD-Europe	WUR-LEI	Update the information once a year with the corresponding information
13	DS-WP1-HD-Global	PBL	Update the information once a year with the corresponding information
14	TOOL-WP3-TM-Sardinia	CE/UPM	Revise and update if necessary. Check once a year
15	TOOL-WP3-TM-Greece	CE/WUR-LEI/UPM/PBL	Revise and update if necessary. Check once a year
16	TOOL-WP3-TM-Andalusia	CE/WUR-LEI/UPM	Revise and update if necessary. Check once a year
17	TOOL-WP3-TM-UK	CE/UPM	Revise and update if necessary. Check once a year
18	TOOL-WP3-TM-Sweden	WUR-LEI/UPM/PBL	Revise and update if necessary. Check once a year
19	TOOL-WP3-TM-Netherlands	CE/WUR-LEI/UPM	Revise and update if necessary. Check once a year

20	TOOL-WP3-TM-Azerbaijan	CE/WUR-LEI/UPM/KTH	Revise and update if necessary. Check once a year
21	TOOL-WP3-TM-Latvia	CE/WUR-LEI/UPM	Revise and update if necessary. Check once a year
22	TOOL-WP3-TM-Germany-France	CE/UPM/PIK	Revise and update if necessary. Check once a year
23	TOOL-WP3-TM- Eastern Germany, Czech Republic and Slovakia	UPM/PIK	Revise and update if necessary. Check once a year
24	TOOL-WP3-TM- Europe	CE/WUR-LEI/UPM/PBL/PIK	Revise and update if necessary. Check once a year
25	TOOL-WP3-TM- Global	CE/WUR-LEI/UPM/PBL/PIK	Revise and update if necessary. Check once a year
26	TOOL-WP4-SDM-Sardinia	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
27	TOOL-WP4-SDM-Greece	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
28	TOOL-WP4-SDM-Andalusia	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
29	TOOL-WP4-SDM-UK	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
30	TOOL-WP4-SDM-Sweden	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
31	TOOL-WP4-SDM-Netherlands	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
32	TOOL-WP4-SDM-Azerbaijan	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
33	TOOL-WP4-SDM-Latvia	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
34	TOOL-WP4-SDM- Germany-France	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
35	TOOL-WP4-SDM- Eastern Germany, Czech Republic and Slovakia	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
36	TOOL-WP4-SDM-Europe	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
37	TOOL-WP4-SDM-Global	IHE/UNEXE/UNISS/EPSILON	Revise and update if necessary. Check once a year
38	TOOL-WP4-SG-Sardinia	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
39	TOOL-WP4-SG-Greece	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
40	TOOL-WP4-SG-UK	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.

41	TOOL-WP4-SG-Sweeden	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
42	TOOL-WP4-SG-Netherlands	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
43	TOOL-WP4-SG-Azerbaijan	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
44	TOOL-WP4-SG-Latvia	UNEXE	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
45	TOOL-WP4-Naming Convention	EUT	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.
46	TOOL-WP4-Semantic Repository	EUT	Check their appearance, stats of use and accessibility. Bug solving if something identified/notified. Server maintenance.

As a conclusion of this part, SIM4NEXUS project is committed with the open-source science though the initiatives of Open Pilot Research and sharing relevant digital tools, models and referring outputs as open source. Moreover, the project is also committed to the maintenance of this assets during specific time beyond the project span⁷ to ensure the people awareness with the nexus.

2.2 Purpose of the data collection/generation and relation to the objectives of the project

SIM4NEXUS develops innovative methodologies to address barriers to a resource efficient Europe such as policy inconsistencies and incoherence, knowledge gaps, especially regarding integration methodologies and tools for the Nexus (a coherent system comprising of Land, food, energy, water and climate aspects), and knowledge and technology lock-ins.

For this purpose, 7 well-known and scientifically established existing “thematic” models are used (E3ME-FTT, MAGNET, CAPRI, IMAGE-GLOBIO, OSeMOSYS, SWIM, MAgPIE). The thematic models provide results for 2010 (baseline), 2020, 2030, 2040, 2050 (and some of them to 2099) and run under the new scenario framework for climate change research, meaning the combination of SSP (shared socio-economic pathways) and RCP (representative concentration pathways). Along these lines, SIM4NEXUS considers as input, public and readily available input data (e.g. Eurostat, GISCO, MODIS, GEOSS, INSPIRE, meteorological stations, JRC/CORINE and others) for future easy-updates and copyright reasons. Types of data to be used as input include NUTS-III¹² for consistency and credibility, while NUTS-II and NUTS-I will also be possible,

⁷ This specific time of 2-3 years could be expanded depending the exploitation plan elaborated.

for coarser approaches. The data that are provided by the thematic models are used as input to the SDMs developed for each case study.

All the Project Objectives are tightly connected to the data collection and generation as (i) existing knowledge on the NEXUS, used to develop new expertise on the Nexus and (ii) the use of advanced integration methodologies based on Complexity Science approaches, are both highly dependent in data collection and generation.

2.3 Types and formats of data generated/collected

Data sets related to the project are: (i) data sets referred to project publications (deliverables and papers) (ii) curated and/or raw data collected produced during the project (see Table 4).

SIM4NEXUS data sets collection and production are mainly linked to WP3 applying the thematic models (i.e. E3ME-FTT, MAGNET, CAPRI, IMAGE-GLOBIO, OSeMOSYS, SWIM MAgPIE) selected for the project within the individual Case Studies (as specified in the Task 3.3 of WP3) to realize a partial simulation of the Nexus components under different scenarios, feeding into the development of the Serious Game. Based on the testing, the partners will then collect and organize the data into a semantic database (triple-store inside the semantic repository) that houses the complexity science tools variables (WP1). It will also review and select the most suitable integration methodologies for the Case Studies and the Serious Game (for WP4). Thereby, integrated complexity science models will be developed for all the Case Studies. These complexity science models will then be used to run many scenarios.

Thus, SIM4NEXUS produces raw data with some parts summarized in deliverables and scientific publications. This raw data, underpinning the published work, constitute the main research data sets that will be made publicly available if the Authors/Data providers give their permission. In cases where release of complete raw data sets is impossible due to, for example, privacy or personal data concerns (such as packet traces involving networking usage of trial participants), SIM4NEXUS Consortium will strive to find data sanitation and anonymization approaches that enable publishing as large parts of the data as possible. Any scripts used for post-processing the raw data will also be shared. Based on D1.3, the following table (Table 5) summarizes the category and the Scenario elements of the collected data:

Table 6 . Category and Scenario elements of the collected data

CATEGORY	SCENARIO ELEMENTS
Demographics	Population total and age structure
Economic development	Global and regional GDP, or trends in productivity Regional, national, and sub-national distribution of GDP, including economic catch-up by developing countries Sectoral structure of national economies, in particular the share of agriculture, and agricultural land productivity Nature of international trade
Welfare	Human development
Environmental & ecological factors	Soil Fertilization Biodiversity

	Floods and droughts Land use, Vegetation Wetlands and irrigation areas
Resources	Fossil fuel resources and renewable energy production Livestock production Other key resources, such as phosphates, fresh water etc.
Technological development	Type (e.g. slow, rapid, transformational) and direction (e.g. environmental, efficiency, productivity improving) of technological progress Diffusion of innovation in particular sectors, e.g. energy supply, distribution and demand, industry, transport, agriculture
Broader societal factors	Attitudes to environment/sustainability/equity and world views Life styles (including diets)
Policies	Non-climate policies including development policies, technology policies, urban planning and transportation policies, energy security policies, and environmental policies to protect air, soil and water quality. It is possible that SSPs could be specified partly in terms of policy objectives, such as strong welfare improving goals, rather than specific policy targets or measures.

The policy domains that will be covered are:

- Water
- Energy and Climate
- Food and Agriculture
- Land Use and Soil

For each of these policy domains more detailed data elements have been collected for each case study and they are described in the following sections. The file type of the outputs is either Microsoft Excel Open XML Spreadsheet (.XLSX File Extension) or Commas Separated Values files (.CSV File Extension), or a generic file type with .DAT file extension. Each dataset of this type may contain data in binary or text format. In addition, for a specific kind of data, 3D map and terrain data are available as well as raster data can be stored in raster files formats such as JPEG, TIFF or GeoTiff. Vector data can be stored in various formats as ESRI Shapefile, MapInfo, DXF, etc.

2.4 Specifications about existing data re-used

Although SIM4NEXUS aspires to produce its own thematic data, it will also use in the most suitable way any existing data that can contribute to its purpose. In this regard, the following data has been used:

3D map and terrain data will be used coming from the following sources:

- The height map data comes from NASA Shuttle Radar Topographic Mission (SRTM) v4.1 and is distributed freely by USGS. The SRTM data is available with a 90m resolution. Not all data from SRTM is being used in the serious game, only data related to the geographical regions of the 12 case studies are used. This data is downloaded from the USGS web and then stored as mesh elements within the serious game client.
- The texture overlay is from Google Earth downloaded from Google

- Public and readily available input data (e.g. Eurostat, GISCO, MODIS, GEOSS, INSPIRE, meteorological stations, JRC/CORINE and others)

Also, some existing ontologies, related to the Nexus, have been analysed to be involved in the SIM4NEXUS context:

- WatERP ontology, which reflects the water manager's expertise to manage water supply and demand. The novelty of WatERP ontology lies on including man interactions with the natural paths as a mechanism to understand how affect into the water resources management with the objective to match supply with demand, these interactions could range from infrastructures to management decisions.
- WEFNexus ontology, which concern Water, Energy and Food derived by the European Directives: Article 2 of EU Directive 98/83/EC that defines the water intended for human consumption; Article 2 of EU Directive 2003/30/EC that defines bio-fuels; Article 2 of EU Regulation 178/2002/EC that defines food.
- SAREF ontology which is being converted in a standard to interrelate different domain information. This ontology provides standard patterns to represent measurements interrelated to geographical areas.

2.5 Origin of the data

The System Dynamics Model that is developed per case study uses data from **3 sources**:

- **Thematic models:** The origin of the data used for the thematic models is organizations, institutes or programs, like Eurostat, GISCO, MODIS, GEOSS, INSPIRE, meteorological stations, JRC/CORINE, NASA, USGS, Google.
- **Climate data:** provided by Project Partner PIK derived from dynamical downscaling in addition to statistical bias correction (Hempel et al, 2013). Data used come from five global circulation models (GCMs) from the Coupled Model Intercomparison Project (CMIP5- Taylor et al., 2012) archive as input: HadGEM2-ES, IPSL-CM5A-LR, MIROC-ESM-CHEM, GFDL-ESM2M, and NorESM1-M. These five models provide data availability of daily data for the required variables covering the period from 1 January 1950 to 31 December 2099 – historical and all Representative Concentration Pathway (RCP) scenarios (Moss et al., 2010). Downscaled climate data are produced for SIM4NEXUS usage (presented in D3.3).
- **Data provided from each case study:** In cases that the thematic models do not meet the data needs to feed the SDMs each case study has to obtain data from National resources (e.g. Greek case study uses data from Hellenic Statistical Authority (<http://www.statistics.gr>)).

2.6 Expected size of the data

It is expected raw or text data size to be manageable in terms of storage capacity. Data like 3D maps it is likely to require more storage capacity than other data.

Considering the specified data in open source, the total amount of generated data corresponds to:

Table 7. Data Assets Size

Data Asset	Size
Historical datasets for all cases	4,2Gb

Thematic Models for all cases	
System Dynamic Models for all cases	24Mb
Thematic Models for all cases	24Mb
Serious Game for all cases	600Mb
Naming Convention	50Mb
Semantic Repository for all cases	600Mb

Considering the previous table, it can be observed that most data provided by SIM4Nexus come from the historical data sets collected to calculate the models and elaborate the future policy-making responses in the game. Moreover, information stored about the game are also relevant and it is expected a growth on their side by the continuous use of the game through their use after project timespan.

Distribution of the Data assets size
Distribution of the data assets size regarding the SIM4NEXUS project

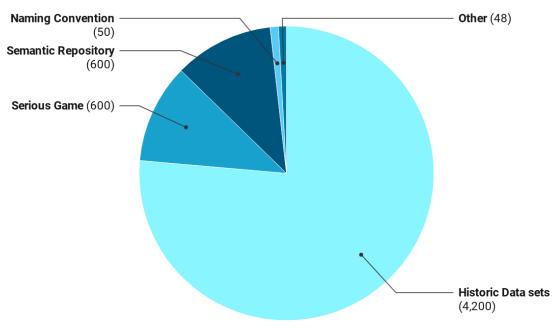


Figure 2. Distribution of the data size generated

2.7 Outline the data utility: to whom will it be useful

As represented within the previous sections, the data generated in SIM4NEXUS is relevant in the Nexus research in several regions around Europe and globally. Most of this data is for public use and corresponds to data that will be publicly released in Zenodo (www.zenodo.org) to be used by scientists, authorities and other interested parties involved in the Nexus. Already, most of the collected and produced climatic data are already uploaded and available in Zenodo. Complementing this information, IT and digital tools development code are available in different Gitlab repositories. Moreover, final versions of these tools are publicly available for their use in the section of results inside the SIM4NEXUS webpage. Taking into account these aspects, the following table reflect main stakeholders that could use the different data assets:

Table 8. Data utility by stakeholders

Stakeholder	Data utility
Scientist	Perform research on the nexus through the use of reliable data sets from different representative regions in EU.
Authorities	Knowledge sharing about the nexus information at cross-European level through the use of the serious game and subsequent modelling tools. Moreover, the information could be relevant from them to perform an overall vision about the Nexus.
Environmentalists	Perform research on the nexus through the use of reliable data sets from different representative regions in EU.

IT/AI/Game developers specialists	Evidence on the application of Serious Game, the corresponding code could be reuse for future research on the field and the generation of newer innovations sustained in the project outcomes.
Policy-makers	Establishment and reinforcement of their knowledge about the nexus interrelationships to tackle efficient decisions. Generated historical data, thematic models output and system dynamic outputs could be relevant for their statistics too.
Society in general	Increase the awareness on the important of the nexus in the fights against climate change. Also, it is relevant for this societal pillar the interaction with the game and generated data to support future envisions on co-creation projects and policies in reference with the nexus.

2.8 Data accessibility for public use

Data collections aims to serve for private and public use. Private use has been widely covered in previous data management plans. So, within this section, we cover the public use of the data according to the relevant stakeholders identified in the previous section.

Focusing on the public use of data, the table and accessibility of open data has been defined and established in the Table 4. Considering the datasets for public use, it mainly involves specific case-study historic information, case studies' System Dynamic Models and thematic models generated (considering also their outcomes). In this regard, the SIM4NEXUS project has developed and published baseline information based on previous information just for the interest of the scientific community.

Considering all of these information put publicly available, the following table provide a link to the access to the different datasets and tools generated under SIM4NEXUS project:

Table 9. Data Accessibility and public use

Data Asset	URL
Datasets & Baselines	Zenodo (https://zenodo.org/search?page=3&size=20&q=SIM4NEXUS#)
Thematic Models	Zenodo (https://zenodo.org/search?page=3&size=20&q=SIM4NEXUS#)
System Dynamic Models	Zenodo (https://zenodo.org/search?page=3&size=20&q=SIM4NEXUS#)
Serious Game	https://seriousgame.sim4nexus.eu/sim4nexus-LoginPage.html
Semantic Repository	https://seriousgame.sim4nexus.eu/semanticRepository/
Naming Convention	https://seriousgame.sim4nexus.eu/namingConvention/#/

2.8.1 Semantic repository

The Semantic Repository is designed to store information related to the concepts, properties and restrictions from the Nexus procedures; to improve the data integration of diverse sources and, finally, to support the analytical services to be developed under SIM4NEXUS. This repository, which is currently focused on describing and interrelating the nexus variables with the corresponding policies and game context. Indeed, the semantic repository supports also the harmonization and understanding of the System Dynamic Models and Thematic Models under a common data exchange structure.

A triple-store is being used to be the base of the repository and an ontology to semantically represent the stored data. The ontology has been developed and publicly available in the following link:

<https://seriousgame.sim4nexus.eu/ontology/>

The intention of make public the SIM4NEXUS ontology model is to further advance in the research on the interrelation of nexus variables. The ontology will be maintained live through several evolvements beyond the project lifespan. Responsible partner for this will be EURECAT as main developer of the model. Considering the information of the ontology, the semantic repository stores information about the case studies, the different regions, the game learning goals, the policy objectives and also the information about the different policies that could be applied within the game. Complementing the game information, the semantic repository also stores information about the nexus variables regarding each demo-case to support the running of the different system dynamic and thematic models.

The ontology is defined using the Web Ontology Language (OWL), a Semantic Web language designed to represent rich and complex knowledge about things, and relations between things. As described in 2.4 already existing ontologies, related to the Nexus, have been analysed to be involved in the SIM4NEXUS context:

- WatERP ontology
- WEFNexus ontology
- SAREF ontology

Moreover, the semantic repository also is publicly accessible in the following link, including general information that is being served to the serious game:

<https://seriousgame.sim4nexus.eu/semanticRepository/>

2.8.2 3D map and terrain data in serious game

The 3D map available in current Serious Game user interface prototype is rendered from 2 sources – a height map and a texture overlay:

- The height map data comes from NASA Shuttle Radar Topographic Mission (SRTM) v4.1 and is distributed freely by USGS. The SRTM data is available with a 90m resolution. Not all data from SRTM is being used in the serious game, only data related to the geographical regions of the 12 case studies are used. This data is downloaded from the USGS web and then stored as mesh elements within the serious game client.
- The texture overlay is from Google Earth, it is downloaded from Google and then stored within the serious game client.

Consequently, SIM4NEXUS has not generated any data to share in this regard due to the project reuse existing publicly available datasets.

2.8.3 Other considerations

As stated in D.9.1, SIM4NEXUS project, foresee to provide both short and long-term benefits for the involved decision-makers and their associated networks. Given the above, «*the only ethics issues involved in the SIM4NEXUS study concern general ethical issues of informed consent, anonymity and confidentiality associated with the voluntary involvement of human participants in the European Union*».

SIM4NEXUS project not involve types of data related to sensitive topics (well described in D.9.1), which might generate uncomfortable situations such as psychological stress, any kind of anxiety or humiliation, deception, or any potential increased danger to participants, or gathering of personal data from participants. Thus, SIM4NEXUS has defined approaches for the following issues:

1. Collection and processing of personal data (described in D.9.1)
2. General ethics commitments (described in D.9.1)
3. Storing and sharing information (described in D.9.1)
4. Accessing and using of information (described in D.9.1)
5. Protection of Information (described in D.9.1)

Also, SIM4NEXUS consortium signed an ethics agreement based on the European Code of Conduct for Research Integrity, published by the European Science Foundation (http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf) and the ethical principles for conducting community-based participatory research, as defined by the National Co-ordinating Centre for Public Engagement of Durham University, UK (www.publicengagement.ac.uk). This ensured the fair and equal power relationships between researchers and participants in the use of the serious game for demonstration purposes.

2.9 SIM4NEXUS Case Studies

SIM4NEXUS has been implemented in 12 case studies (Table 6) that represent various NEXUS contrasting attributes such as biophysical, socio-economic and policy ones. An analytical **Catalogue** of all the datasets collected/generated along with their metadata, is presented in **ANNEX 1**.

Table 10 . SIM4NEXUS Case studies

#	LEVEL	CASE STUDY
1	REGIONAL	Region of Andalusia
2		Island of Sardinia
3		SouthWest of the UK
4	NATIONAL	The Netherlands
5		Sweden
6		Greece
7		Latvia
8		Azerbaijan
9	TRANSBOUNDARY	France-Germany
10		Eastern Germany, Czech Republic and Slovakia
11	HIGHER	Europe
12		Global

2.9.1 Sardinia – Fast Track Case Study

The case of Sardinia was used as a fast-track application to identify difficulties in data collection and harmonization, in model implementation and detect any potential complications in the integration of all the Nexus components. In this regard, climate and model outputs data (E3ME and CAPRI) have been collected/generated and currently the process of publishing them open access is underway. More specifically, the data that has been published refers to **climate data** and relevant information for all demo-cases. Moreover, thematic modes and system dynamic model outputs has been also generated and published.

3.8.1.1. Climate Data for Sardinia

The following table (Table 7) summarizes the monthly climate data (historical or scenarios) that are collected for various time ranges and from various model resources (**Data Provider: PIK**, **data format: .dat**).

Table 11. Climate Data collected/generated for Sardinia case study

Climate Data	Time Range	Scenario Models
Daily and monthly precipitation (mm/d)	1961-2004	Historical ----- GFDL-ESM2M IPSL-CM5A-LR HadGEM2-ES
Daily and monthly relative humidity (%), 2m above ground	2005-2099	RCP2P6 RCP4P5 RCP6P0 RCP8P5 MIROC-ESM-CHEM NorESM1-M
Daily and monthly long-wave downward solar radiation at the ground (W/m ²)		
Daily and monthly short-wave downward solar radiation at the ground (W/m ²)		
Daily and monthly		

average air temperature 2m above ground (°C)			
Daily and monthly maximum air temperature (°C)			
Daily and monthly minimum air temperature (°C)			
Daily and monthly wind speed at 10m height (m/s)			

3.8.1.2. CAPRI MODEL – Data Categories

Data **Categories** obtained from CAPRI for Baseline 2010 and 2030 (RCP 8.5) are summarized in the following tables (Table 8 & 9):

Table 12 . Data categories in CAPRI, Baseline 2010

Baseline 2010
Water Supply Details: Area, Yield
Biofuel Markets: Bio-Diesel, Bio-Ethanol
Producer Price /Product
Prices Market: Producer Price (€/T) – Consumer Price (€/T)

Table 13 . Data Categories in CAPRI, 2030 - RCP 8.5

Baseline 2030 – RCP 8.5
Water Supply Details: Area, Yield
Irrigation Water Use: Total Land, Irrigated Land, Irrigation Water Use (ha, tn)
Water Supply Details (aggregate): Area, Yield

Biofuel Markets: Bio-Diesel, Bio-Ethanol

Producer Price /Product

Prices Market: Producer Price (€/T) – Consumer Price (€/T)

The data produced by CAPRI for Water Supply Details (baseline 2010, 2030-RCP8.5) are listed in Table 10.

Table 14. Water Supply Details (area & yield)

WATER SUPPLY DETAILS (Hectares/herd size[ha/hds], Yield [kg, Const EU or 1/1000 head/ha], Supply - [1000 t, 1000 ha or Mio Const EU])		
Utilized agricultural area	Tobacco	Dairy Cows high yield
Cereals	Other industrial crops	Dairy Cows low yield
Oilseeds	Other crops	Other Cows
Other arable crops	Vegetables and Permanent crops	Heifers breeding
Vegetables and Permanent crops	Tomatoes	Heifers fattening high weight
Fodder activities	Other Vegetables	Heifers fattening low weight
Set aside and fallow land	Apples Pears and Peaches	Male adult cattle high weight
All cattle activities	Other Fruits	Male adult cattle low weight
Beef meat activities	Citrus Fruits	Raising male calves
Other animals	Table Grapes	Raising female Calves
Utilized agricultural area	Olives for oil	Fattening male calves
Cereals	Table Olives	Fattening female calves
Soft wheat	Wine	Beef meat activities
Durum wheat	Nurseries	Other Cows
Rye and Meslin	Flowers	Heifers fattening high weight
Barley	Fodder activities	Heifers fattening low weight
Oats	Fodder maize	Male adult cattle high weight
Grain Maize	Fodder root crops	Male adult cattle low weight
Other cereals	Fodder other on arable land	Other animals
Paddy rice	Gras and grazings extensive	Pig fattening
Oilseeds	Gras and grazings intensive	Pig Breeding
Rape	Abandoned grass lands	Milk Ewes and Goat
Sunflower	Set aside and fallow land	Sheep and Goat fattening
Soya	Set-aside obligatory, idling	Laying hens
Other oils	Set-aside obligatory, used as grass land	Poultry fattening
Other arable crops	Set-aside obligatory, tree cover	Other animals
Pulses	Set-aside voluntary	Pasture
Potatoes	Fallow land	Arable land
Sugar Beet	Abandoned arable land	All agricultural activities
Flax and hemp	All cattle activities	

The data produced by CAPRI for Irrigation Water Use (baseline 2010, 2030-RCP8.5) are listed in Table 11.

Table 15 . Irrigation Water Use (area, volume)

IRRIGATION WATER USE			
Hectares/herd size[ha/hds], Yield [kg, Const EU or 1/1000 head/ha], Supply - [1000 t, 1000 ha or Mio Const EU]			
soft wheat	paddy rice	sugar beet	apples pears and peaches
durum wheat	rape	flax and hemp	other fruits
Rye and Meslin	sunflower	tobacco	citrus fruits
barley	soya	other industrial crops	table grapes
oats	other oils	other crops	olives for oil
grain maize	pulses	tomatoes	table olives
other cereals	potatoes	other vegetables	wine

The data produced by CAPRI for Biofuel Markets (baseline 2010, 2030-RCP8.5) are listed in Table 12.

Table 16. Biofuel Markets

BIOFUEL MARKETS	
Total Biofuel production - [1000 t]	Energy share in total fuel use - [%]
First Generation Biofuels (from Agriculture) - [1000 t]	Energy share in total fuel use of Quota obligation - [%]
Second Generation Biofuels - [1000 t]	Imports - [1000 t]
Biofuels from non-agricultural sources - [1000 t]	Exports - [1000 t]
Biofuel-use by transport sector - [1000 t]	consumer prices - [Euro/ton]
Biofuel-use by industry - [1000 t]	consumer taxes - [Euro/Ton]

The data produced by CAPRI for Producer Price (€/tn) (baseline 2010, 2030-RCP8.5) are listed in Table 13.

Table 17. Producer Prices

PRODUCER PRICE (€/TN)			
All primary agricultural output	Apples pears and peaches	Young heifer output	Heating
Cereals	Table grapes	Young male calf output	Lubricants
Oilseeds	Citrus fruits	Young female calf output	Water
Other arable field crops	Other fruits	Young piglet output	Agricultural Services input
Vegetables and Permanent crops	Olive for oil	Young lamb output	Other input
Coffee, Teas and Cocoa	Table olives	Young chicken output	Dairy products
All other crops	Wine	Manure output	Butter
Fodder	Coffee, Teas and Cocoa	Manure nitrate	Skimmed milk powder
Meat	Coffee	Manure phosphate	Cheese
Other Animal products	Tea	Manure potassium	Fresh milk products
Fish and other aquatic products	Cocoa	Fertiliser	Cream
Young animals	All other crops	Nitrate (N)	Concentrated milk
Manure output	Other oil	Potassium (K2O)	Whole milk powder
Fertiliser	Flax and hemp	Calcium fertiliser	Casein
Feedingstuff	Tobacco	Feedingstuff	Whey powder
Remonte	Other industrial crops	Feed cereals	Oils
Other inputs	Nurseries	Feed rich protein	Rape seed oil

Dairy products	Flowers	Feed rich energy	Sunflower seed oil
Oils	Other crops	Feed from milk product	Soya oil
Oil cakes	Fodder	Feed other	Olive oil
Secondary products	Fodder maize	Fodder maize	Palm oil
All products	Fodder root crops	Fodder root crops	Other oil
All primary agricultural output	Other fodder from arable land	Fodder other on arable land	Oil cakes
Cereals	Straw	Gras	Rape seed cake
Soft wheat	Meat		Sunflowe seed cake
Durum wheat	Beef	Milk for feeding	Soya cake
Rye and meslin	Pork meat	Sheep and Goat Milk for feeding	Olive cakes
Barley	Sheep and goat meat	Remonte	Other cakes
Oats	Poultry meat	Young cow input	Secondary products
Grain maize	Other Animal products	Young bull input	Rice milled
Other cereals	Cow and buffalo milk	Young heifer input	Molasse
Paddy rice	Sheep and goat milk	Young male calf input	Starch
Oilseeds	Raw milk	Young female calf input	Sugar
Rape seed	Eggs	Young piglet input	Bio diesel
Sunflower seed	Milk for feeding	Young lamb input	Bio ethanol
Soya seed	Other animal output	Young chicken input	Distilled dried grains from bio-ethanol processing
Other arable field crops	Fish and other aquatic products	Other inputs	Protein rich by products
Pulses	Fresh water fish	Seed	Energy rich by products
Potatoes	Saltwater fish	Plant protection	Total diesel
Sugar beet	Other acquatic	Pharma. inputs	Agricultural land
Yams, Manioc, Cassava and Other Roots and Tubers	Young animals	Maintenance machinery	Feed energy input
Vegetables and Permanent crops	Young cow output	Maintenance buildings	Total gasoline
Tomatoes	Young bull output	Electricity	Land
Other vegetables	Phosphate (P2O5)	Fuel	

The data produced by CAPRI for Market Prices (€/tn) (baseline 2010, 2030-RCP8.5) are listed in Table 14.

Table 18. Market Prices

MARKET PRICE (€/TN)

Cereals	Soya seed	Sheep and goat meat	Palm oil
Oilseeds	Other arable field crops	Poultry meat	Oil cakes
Other arable field crops	Pulses	Other Animal products	Rape seed cake
Vegetables and Permanent crops	Potatoes	Raw milk	Sunflowe seed cake

Coffee, Teas and Cocoa	Yams, Manioc, Cassava and Other Roots and Tubers	Eggs	Soya cake
All other crops	Vegetables and Permanent crops	Fish and other aquatic products	Secondary products
Meat	Tomatoes	Fresh water fish	Rice milled
Other Animal products	Other vegetables	Saltwater fish	Sugar
Fish and other aquatic products	Apples pears and peaches	Other aquatic	Bio diesel
Dairy products	Table grapes	Dairy products	Bio ethanol
Oils	Citrus fruits	Butter	Distilled dried grains from bio-ethanol processing
Oil cakes	Other fruits	Skimmed milk powder	Protein rich by products
Secondary products	Table olives	Cheese	Energy rich by products
All primary agricultural output	Wine	Fresh milk products	Total diesel
Cereals	Coffee, Teas and Cocoa	Cream	Agricultural land
Wheat	Coffee	Concentrated milk	Feed energy input
Rye and meslin	Tea	Whole milk powder	Total gasoline
Barley	Cocoa	Casein	Fat content
Oats	All other crops	Whey powder	Protein content
Grain maize	Flax and hemp	Oils	All non agricultural goods
Other cereals	Tobacco	Rape seed oil	Sum
Oilseeds	Meat	Sunflower seed oil	
Rape seed	Beef	Soya oil	
Sunflower seed	Pork meat	Olive oil	

3.8.1.3. E3ME Model – Data Categories

Data Categories along with the pertinent data generated by E3ME are presented in the following tables:

Table 19. Output & Employment by sector. Available for years 2010-2030

OUTPUT BY SECTOR (M €) - EMPLOYMENT BY SECTOR (1K PERSONS)			
1 Crop production	19 Electronics	37 Warehousing	55 Employment activities
2 Forestry	20 Electrical equipment	38 Postal & courier act.	56 Travel agency
3 Fishing	21 Machinery	39 Hotels & catering	57 Security & admin.
4 Coal	22 Motor vehicles	40 Publishing activities	58 Public admin. & def.
5 Oil and Gas	23 Oth. transport equip.	41 Broadcasting & movies	59 Education
6 Other mining	24 Manufacturing nes	42 Telecommunications	60 Human health activ.
7 Food	25 Repair & installation	43 Computer services	61 Residential care
8 Textiles & leather	26 Electricity	44 Financial services	62 Arts & ent activ.
9 Wood & wood prods	27 Gas	45 Insurance	63 Sports activities
10 Paper & paper prods	28 Water supply	46 Auxiliary to finance	64 Membership orgs.
11 Printing	29 Sewerage & waste	47 Real estate	65 Repair hhold goods

12 Manufactured fuels	30 Construction	48 Imputed rents	66 Other personal serv.
13 Chemicals nes	31 Sale of cars	49 Legal	67 Households employers
14 Pharmaceuticals	32 Other wholesale	50 Architect & engineer	68 Extraterritorial org.
15 Rubber & plastic	33 Other retail	51 R&D activities	69 Unallocated/Dwellings
16 Non-Met. Min. prods.	34 Land transport	52 Advertising	70 Hydrogen Supply
17 Basic metals	35 Water transport	53 Other professional	
18 Metal products	36 Air transport	54 Rental & leasing	

Table 20. CO2 emissions by sector

CO2 EMISSIONS BY SECTOR (THTC)			
1 Power own use & trans.	7 Non-metallics nes	13 Other industry	19 Households
2 O.energy own use & tra	8 Ore-extra.(non-energy)	14 Construction	20 Agriculture
3 Hydrogen production	9 Food	15 Rail transport	21 Fishing
4 Iron & steel	10 Tex.	16 Road transport	22 Other final use
5 Non-ferrous metals	11 Paper & pulp	17 Air transport	23 Non-energy use
6 Chemicals	12 Engineering etc	18 Other transp. serv.	

Table 21. Energy demand for coal – oil – gas – electricity – heat – biomass - combustible waste, by sector

ENERGY DEMAND FOR COAL – OIL – GAS – ELECTRICITY – HEAT – BIOMASS – COMBUSTIBLE WASTE, BY SECTOR (TH TOE)			
1 Power own use & trans.	7 Non- metallics nes	13 Other industry	19 Households
2 O.energy own use & tra	8 Ore- extra.(non- energy)	14 Construction	20 Agriculture
3 Hydrogen production	9 Food	15 Rail transport	21 Fishing
4 Iron & steel	10 Tex.	16 Road transport	22 Other final use
5 Non-ferrous metals	11 Paper & pulp	17 Air transport	23 Non-energy use
6 Chemicals	12 Engineering etc	18 Other transp. serv.	

Table 22. Electricity generation by technology

ELECTRICITY GENERATION BY TECHNOLOGY (GWH/Y)	
Nuclear	Hydro
Coal	Solar
Oil	Wind
Gas	Other

Biomass

3. FAIR Data – Specifics

Intellectual Property Rights (IPR) management in SIM4NEXUS project is a substantial part of its data management plan. Usually, data content and their system are treated as one parameter, but when the matter comes to IPR, a distinction between the databases and data content is of outmost importance. It is imperative for other users to know how they can reuse both the data collected, assembled, or generated and the databases where these are included.

The Open Data Commons group (<http://opendatacommons.org>) developed the following tools to govern the use of data sets. The three ODC licenses are:

- **Public Domain Dedication and License (PDDL):** This makes the use of the database and its content free to the public domain.
- **Attribution License (ODC-By):** Users can make use of the database and its content in new and different ways, but they need to provide an attribution to the source of the data and/or the database.
- **Open Database License (ODC-ODbL):** ODbL stipulates that any use of the database must provide attribution, and any new outcomes must use the same terms of licensing (also an unrestricted version of the new product must always be accessible).

Considering aspects related between ownership of the data combined with Open Research Data, SIM4NEXUS has published the datasets in the following licenses ensuring the maintenance of the provenance and background of the parties involved:

Data Asset	License
Datasets & Baselines	Creative Commons Share Alike 4.0 International
Thematic Models	Creative Commons Share Alike 4.0 International
System Dynamic Models	Creative Commons Share Alike 4.0 International
Serious Game	Creative Commons Share Alike 4.0 International
Semantic Repository	MIT License
Naming Convention	MIT License

3.1 Making data findable, including provisions for metadata

As depicted in the previous sections, SIM4NEXUS will publish open data coming from the scientific results and outcomes in Zenodo. By using this platform, we ensure the research data findable in agreement with the H2020 Open Access Mandate.

Hence, all uploads in Zenodo will be enriched with standard Zenodo metadata, including the following information:

- Publication Date
- DOI
- Grants

- License
- Versions

By means of publishing information in Zenodo, we also ensure the information is indexed in Open Aire and then contribute to the open research at European level.

At last but not least, the information published in the Serious Game, Naming Convention and Semantic Repository is also findable and accessible using the Linked Data principles. In this regard, SIM4NEXUS ensures all information exchanged between the digital modules is in JSON-LD format following the metadata established under the SIM4NEXUS ontology.

3.1.1 Discoverability of data

All data, information, and knowledge considered relevant for the scientific community is made accessible under Open Access. In this regard, data has been shared in relation to (i) publications (deliverables and papers) and (ii) curated and/or raw data. For the data linked to scientific publication, the publication will serve as the main piece of metadata documentation for the shared data.

In the particular situations when this is not seen as being adequate for the comprehension of the raw data, a report has been shared along with the data explaining their meaning and methods of acquisition.

3.1.2 Identifiability of data and refer to standard identification mechanism – Use of DOI

All the available datasets have been uploaded in Zenodo. In this regard, Data set reference and naming will be implemented to employ a standard identification mechanism for each data set according the metadata standard implemented. Zenodo (a popular repository for research data, will be extensively exploited throughout the project) assigns all publicly available uploads a Digital Object Identifier (DOI) to make the upload easily and uniquely citable. Zenodo supports harvesting of all content via the OAI-PMH protocol.

3.1.3 Naming and conventions used

The climate datasets that will be published in Zenodo are of a generic file type with .DAT file extension containing binary or text format. Naming and conventions are assigned to provide a standardised name to each dataset in the following format:

Country code_Earth System Model_Simulation Method_Period_Time frequency.dat

The variables coded for climate data are:

Table 23. Metadata information in climatic data

CLIMATIC VARIABLES CODED	
pr	precipitation (mm/d)
rhs	relative humidity (%), 2m above ground
rlds	long-wave downward solar radiation at the ground (w/m2)

rsds	short-wave downward solar radiation at the ground (w/m2)
tas	average air temperature, 2m above ground (°c)
tasmax	daily maximum air temperature (°c)
tasmin	daily minimum air temperature (°c)
wind	wind speed at 10 m height (m/s)

For example, the file named *sardinia_pr_HadGEM2-ES_rcp2p6_2005-2099_monthly.dat* contains precipitation time series (2005-2099) for Sardinia calculated using HadGEM2-ES model and rcp2p6 simulation method. By using this metadata information in the naming of the datasets it is easy to identify the contained variables and the way they are produced (i.e. model and simulation methods), the addressed area, and the duration and time frequency.

3.1.4 Approach towards search keyword

Considering the collected/produced data by SIM4NEXUS at large scale, search and filter by keywords (or concepts) has been used in order to facilitate their use (case of semantic repository and naming convention) (Figure 3). Moreover, the published datasets in Zenodo also allows search by keywords and filtering of the information.

The screenshot shows the Nexus Data Explorer interface. At the top, there's a navigation bar with tabs like Home, Explorer, and SPARQL Endpoint. Below the navigation bar, the title 'Nexus Data Explorer' is visible. The main content area is titled 's4n:PolicyCard'. On the left, there's a detailed view of the dataset with sections for active_time, actuationFormulas, affectedBy, affectsTo, appliedTimes, building_time, comments, cost_generated_qualitative, cost_generated_value, cost_qualitative, and cost_value. On the right, there are 'Nexus Facets' panels for actuationOver (with 78 results), Object (listing Household_DIV_Commercial_WD_GR04_GR06_per_capita_household_water_consumption, Household_DIV_Commercial_WD_GRXX_GRX_per_capita_tourist_water_consumption, Household_DIV_Commercial_WD_GR04_GR06_per_capita_tourist_water_consumption, Household_DIV_Commercial_WD_GRXX_GRX_per_capita_household_water_consumption, and RBD_LU_GRXX_Forest), name (with 147 results), and langString.

Figure 3. Search by keywords and filtering inside the SIM4NEXUS

3.1.5 Approach for clear versioning

Zenodo repository standardization ensures that data is stored under specific structure to be easily identified in a historical basis.

3.1.6 Specify standards for metadata creation

Metadata standards are required to (i) establish a common understanding of the meaning of the data, and (ii) ensure correct and proper use and interpretation of the data by its owners and users. To achieve this, a number of characteristics, or attributes of the datasets have been defined and are described in the following section.

3.1.7 Type of metadata created and how

Along with the metadata described in [Section 4.1.3](#) for the content of the datasets, metadata are also created for each dataset to describe the size of the file, its format, the data provider (owner), last update (date), time of update. In addition, a very short description of all the datasets is also provided (Table 20):

Table 24. Metadata created

METADATA CREATED PER DATASET
Size (k)
Format
Short Description (thematic)
Data Provider
Last Update (data)
time of update

3.2 Making data openly accessible

SIM4NEXUS project make main demo-cases datasets publicly available considering Open Access (OA). More specifically the datasets to be released OA are the climatic data (historic and scenarios). Following this agreement, the climatic data have been uploaded in Zenodo since November 2018. The outputs of the models (baselines) that are applied in the case studies are published (OA) on month 42 of the Project.

As detailed in section 132, and 3.1, all data, information, and knowledge considered relevant for the scientific community will be made accessible under Open Access. At the moment, all datasets, and other means of information storage has been published in Zenodo, project websites and/or the different tools generated in the project (depending the final use).

3.2.1 Specifics on which data will be made openly available

Considering the data published as an open access, a detailed description is provided in Section 2.1.

3.2.2 Which data is kept closed and provide the rationale?

No data has been considered as close.

3.2.3 How the data will be made available

Data has been made available through Zenodo Repository, which is compliant with the H2020 regulations. In general, for Public Availability of Data, data has been shared when the related deliverable, paper or data set has been made available at an Open Access (OA) repository from the responsible partner/owner of the specific data. Most of the data used for scientific publications and for other research purposes has been openly released and shared. Considering the procedure accomplished for data sharing, the lead author has been responsible for getting approvals of all involved partners and then sharing the data and metadata on Zenodo. The Lead Author has been also responsible for creating an entry on OpenAIRE to link the publication to the data.

OpenAIRE is a service built to offer this functionality and has been used to reference both the publication and the data. A link to the OpenAIRE entry has been submitted to the SIM4NEXUS Website Administrator (FT) by the Lead Author in order to index and publish the corresponding information.

In view of the precautions for protection of personal data, data published in SIM4NEXUS in this line follows the rules of confidentiality, anonymity, and protection. Anonymized final data sets has been made open access and specific procedures has been set on how data should be preserved and archived in the repository. We are aware of post-publication risks to local researchers and end-users in our research sites and we have mitigated all reasonable risk before its publication according to the ethical and IPR requirements set.

To ensure archiving and preservation of long-tail research data during the project, the information has been published in different repositories (Section 2.1). Moreover, data preservation under the mentioned data repositories has been initially summarized in Section 2.1. In detail the main data repositories of data inside the project corresponds to the Naming Convention Tool and the Semantic Repository. Both tools have been set up to provide online and reliable data regarding the game and the variables considered for elaborating the game. The Naming Convention Tool and the Semantic Repository has been deployed in EPSILON server and made openly accessible accordingly.

Based on the deployment of these tools in EPSILON servers, data will be preserved during 5 years after the project ends. Moreover, it is the commitment of having these tools online available through 2-3 years before the project ends. This duration is considered in the worst case the exploitation of the tools does not receive any income to continuous their maintenance. Finally, this data maintenance also covers potential bug fixing in collaboration with EUT. After 5 years after project ends and if the SIM4NEXUS initiative disrupt, the data will be removed according to the GDPR regulation, removing all copies of data and also all personal information stored by the game.

3.2.4 What methods and software needed to access the data included?

There are many technologies that can be exploited and adopted to perform this function.

The Semantic Repository, the Knowledge Elicitation Engine and the Naming Convention Tool corresponds to REST architectures to share and make discoverable the information. The interaction between these tools with a different client (other applications, Serious Games, etc.) are accomplished using a standard request-response model of the HTTP protocol. That is, a client sends a request to the server using HTTP and expects to receive a response to the request or an exception message.

Repository service access is based upon the HTTP protocol with client and server requests and responses using JSON or JSON-LD. Client applications can use this interface for executing service repository queries and receiving service repository metadata results. Basically, the essential purpose of these tools are to enable a user to locate, access, and make use of resources in an open, distributed system by providing facilities for retrieving, storing, and managing many kinds of resource descriptions.

These tools developed under SIM4NEXUS can store a multitude of resource descriptions that conform to any standard Internet media type, as:

- XML schemas
- Audio annotations
- Specification documents
- Style sheets for generating detailed topographic maps.

Furthermore, arbitrary relationships among the different information items can be expressed by creating links between any two resource descriptions (semantic/ontology linkage of the information). For example, a service offer may be associated with descriptions of the data sets that can be acquired using the service.

Hence, these tools profile provides a flexible, general-purpose catalogue service that can be adapted to meet the needs of diverse communities of practice within the geospatial domain. In the SIM4NEXUS framework, the following rules are respected:

2. Communicate information adopting standard protocols (e.g. XML/JSON, OGC standards, etc.).
3. Try to adopt a solution that allows for the maximum interoperability among actors who will process the data stored.
4. State of the art technologies that will be used in the context of the REST API include:
 - a. Zenodo repository for research data.
 - b. Semantic Repository to store gaming information and data regarding the Serious Game
 - c. Knowledge Elicitation Engine as a data broker to run the thematic and SDM models and provide the game logic and geospatial information.
 - d. SIM4NEXUS Data Navigation Tool

3.2.5 Documentation of software needed to access the data included

The following repositories provide a sound documentation for accessing the data:

Zenodo Repository

Zenodo is built and developed by researchers, in the context of The OpenAIRE project, that in the vanguard of the open access and open data movements in Europe, commissioned by the EC to support their nascent Open Data policy by providing a catchall repository for EC funded research. One of its major advantages is it works closely with GitHub, enabling users to make the work they share on GitHub citable by archiving one of your GitHub repositories and assigning a DOI with the data archiving tool Zenodo.

Naming Convention Tool

The naming convention tool (D4.4) has been constructed to manage and homogenize the case-study variables used for the system dynamic models and the thematic models. This tool corresponds to a web-based tool that permits to have a common agreement of the name of the variables depending their provenance and nature. This aspect permits us to deal with the complexity of different variable names coming from different regional modelling tools.

Semantic Repository

The semantic repository (D4.4) provides data homogenization and link of the case-studies information. Similarly, as occur with the naming convention, the semantic repository is a web-based tool that permits to explore all information of SIM4NEXUS. At domain level, the semantic repository represents an advance

through the publication of an open catalogue of Nexus information and their linkage with policy. We mean, the semantic repository offers the community the possibility to analyse openly the implications of a policy in certain topics (policy objectives) considering the Nexus. At technology level, main innovation with the semantic repository relies on the data navigation using facets. That means, this tool provides a navigation through the information using the properties of the defined entities (navigation using the semantics of the information).

SIM4NEXUS Data Navigation Tool

The data navigation tool streamlines the exchange of information between the Thematic Models (and other relevant sources) and the Case Studies (Figure 5). It is built upon a harmonized dimensional data model representing the output of the thematic models as defined in deliverable 5.2, and serves as a central window point for the case studies to locate, query, and export all data. The tool offers the user easy navigation through the complex data sets that the thematic models deliver during the project without having to implement their own logic and processes to make the data useful. It is implemented using Power BI desktop on top of data(warehouse) management solution that keeps data history and also performs data quality checks.



Figure 4. Interface of SIM4NEXUS Data Navigation Tool

3.2.6 Inclusion of relevant software (e.g. in open source code)?

There is no software developed for the data management of the SIM4NEXUS. All existing software used (FTP, Zenodo, etc) is described in previous sections.

3.2.7 Data and associated metadata, documentation and code deposit

Semantic Repository, Naming Convention tool and Zenodo repositories are both applicable

3.2.8 Provision of access provided in case of restrictions

Semantic Repository, Naming Convention tool and Zenodo repositories ensure that an authorization scheme can be applied for accessing the data, depending on the scope of the usage. It is upon the partners to decide what is the most appropriate authorization scheme.

3.3 Data interoperability

This section will be updated on next iterations to provide detailed information on how data will be made interoperable to specific quality standards and more in detail:

- Assess the interoperability of project data
- Specifics on data/metadata vocabularies, standards, methodologies followed
- Use of standard vocabulary for all data types present to allow inter-disciplinary interoperability
- Provision of mapping to more commonly used ontologies

To assure data interoperability, SIM4NEXUS project will follow state of the art ontologies and standards. The two main elements, which will store and make available information and services in SIM4NEXUS publicly, are the Knowledge Elicitation Engine and the Semantic Repository. The Knowledge Elicitation Engine is being implemented under Service Oriented Architecture principles, following the OGC standards and services defined for information publication, discovery, exchange, etc. (WPS, WFS, GML). Please refer to deliverable D4.3, section 3.2 for more information. Concerning the Semantic Repository, please refer to [Section 3.7.2](#) in this document for more information and or the D4.4- "Semantic Repository" where details about the SIM4NEXUS ontology, semantic repository and naming convention tool are provided.

3.3.1 Assess the interoperability of project data

All data collected and/or produced in the project are interoperable, since they follow well documented international standards/formats, like JSON/JSONLD, CSV, INSPIRE specification, OGC specification, allowing data exchange and re-use between researchers, institutions, organizations, countries.

3.3.2 Specifics on data/metadata vocabularies, standards, methodologies followed

Described in D4.4 and [Section 4.1](#)

3.3.3 Use of standard vocabulary for all data types present to allow inter-disciplinary interoperability

Described in D4.4 and [Section 4.1](#)

3.3.4 Provision of mapping to more commonly used ontologies

SIM4NEXUS provides their own ontology that also uses terms from the following wide-known and public ontologies:

- e. SAREF ontology. As a reference ontology for the representation of measures and properties (variables).
- f. SAREF4WATR extension. As newer standard to represent water variables and information semantically.
- g. W3C Time ontology to represent timestamps and temporal information.
- h. GEOSPARQL ontology to represent geographic information compliant with the OGC data exchange information.
- i. W3C QUDT ontology to represent commonly the units of measure of the corresponding variables.

3.4 Increased data re-use

This section provides detailed information on how data will be made usable beyond the original purpose for which it was collected, and more in detail:

- Data licensing to permit the widest reuse possible
- Data availability for re-use
- Why and for what period a data embargo is induced
- Data useable by third parties after the end of the project
- Restriction of re-use of some data
- Data quality assurance processes
- Length of time for which the data will remain re-usable

As detailed in section 4, 5.1, and 5.2, all data, information, and knowledge considered relevant for the scientific community is made accessible under Open Access.

3.4.1 Data licensing to permit the widest reuse possible

All the developments performed under SIM4NEXUS yield to use Creative Commons Attribution Share-Alike 4.0 License and MIT license which allows sharing, remixing, transforming and building upon the material for any purpose. Products should be redistributed under the same license. More details about the exploitation of the tools can be found under the D6.2.

3.4.2 Data availability for re-use

Climate data is being publicly available in Zenodo. Model outputs are also available in the same platform. Moreover, gaming data is available in the Semantic Repository and variable information is available under the Naming Convention Tool.

3.4.3 Why and for what period a data embargo is induced

It is decided that all publications will be done until month 42 of the Project and then data will be published OA.

3.4.4 Data useable by third parties after the end of the project

Open Data used by third parties should be cited accordingly with the rules established by Zenodo in case of datasets. This rules includes the name of the authors, the project, the DOI, the nature of the document and the year of publication:

Aliyev, Sultan, Susnik, Janez, Masia, Sara, & Georgios Avgerinopoulos. (2020). SIM4NEXUS System Dynamics Model of Azerbaijan [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.3977922>

3.4.5 Restriction of re-use of some data

The is no restriction of use for the dataset published in open access.

3.4.6 Data quality assurance processes

Data used for SIM4NEXUS is derived from well-known (existing) thematic models, the input data of which comes from readily available databases such as CORINE, INSPIRE, EUROSTAT, GEOSS, EEA, etc.

All these databases provide data with identified quality and provenance. In addition, climatic data are provided from five Global Circulation Models from the Coupled Model Inter-comparison Project (CMIP5 archive) with input: HadGEM2-ES, IPSL-CM5A-LR, MIROC-ESM-CHEM, GFDL-ESM2M, and NorESM1-M. These five models provide availability of daily data for the required variables covering the period from 1 January 1950 to 31 December 2099 – historical and all Representative Concentration Pathway (RCP) scenarios.

3.4.7 Length of time for which the data will remain re-usable

According to the Section 2.1, the data made openly accessible will be updated continuously within 2-3 years after SIM4NEXUS ends. After this period, the data will be maintained in Zenodo without any update. In case of the digital tools, it will be available within the same period. However, the services will be suspended for public use after that period if not acquired any income to maintain it according to the final exploitation plan.

4. Allocation of resources

4.1 Costs for making data FAIR in SIM4NEXUS

The cost is estimated at 1-person month per case study to making data FAIR and maintainable. Thus, the total cost is estimated at 120.000€-180.000€ including travel, other costs (24-36 person/months @5.000/p-m). This amount is already covered by project budget.

4.2 How will these be covered?

During the project life, cost is covered by the SIM4NEXUS budget.

Following project closure, this cost will be covered by the pilots or new applications (impact analysis) partners.

4.3 Who will be responsible for data management in your project?

EPSILON, Partner 19 is responsible for the data management.

4.4 Resources for long term preservation

Long term preservation resources are:

- **Costs:** estimated as 10% (per year per case study) of the original costs (≈12.000€) for making data FAIR.
- **Potential value:** updated for 2-3 years after the project's completion. After this timeframe, the value of the preserved database will be questionable. It is a matter of the Project's exploitation.
- **Who decides and how:** the SIM4NEXUS Consortium has decided on the duration of the long-term preservation of the data
- **What data will be kept:** All the data used for the SIM4NEXUS application in the 12 case studies.
- **For how long:** The data will be preserved for 2-3 years after project completion. After this period, the data has no value, and unless the project is exploited with additional applications, the database will be obsolete.

5. Data security

5.1 Provisions for data security (including data recovery as well as secure storage and transfer of sensitive data)?

All provisions of Web catalogue and Zenodo repositories

5.2 Is the data safely stored in certified repositories for long term preservation and curation?

According to Zenodo policies on longevity (<http://about.zenodo.org/policies/>)

- **Versions:** Data files are versioned. Records are not versioned. The uploaded data is archived as a Submission Information Package. Derivatives of data files are generated, but original content is never modified. Records can be retracted from public view; however, the data files and record are preserved.
- **Replicas:** All data files are stored in CERN Data Centres, primarily Geneva, with replicas in Budapest. Data files are kept in multiple replicas in a distributed file system, which is backed up to tape on a nightly basis.
- **Retention period:** Items are retained for the lifetime of the repository. This is currently the lifetime of the host laboratory CERN, which currently has an experimental programme defined for the next 20 years at least.
- **Functional preservation:** Zenodo makes no promises of usability and understandability of deposited objects over time.
- **File preservation:** Data files and metadata are backed up nightly and replicated into multiple copies in the online system.
- **Fixity and authenticity:** All data files are stored along with a MD5 checksum of the file content. Files are regularly checked against their checksums to assure that file content remains constant.
- **Succession plans:** In case of closure of the repository, best efforts will be made to integrate all content into suitable alternative institutional and/or subject based repositories.

6. Ethical & Security aspects

6.1 General

Within the SIM4NEXUS study only general ethical issues are concerned such as informed consent, anonymity and confidentiality associated with the voluntary involvement of human participants in the European Union. Types of such data collected in SIM4NEXUS are various user interviews, opinions and reviews associated with project's components. Non-exhaustive list is as follows:

- Stored involvement of Serious Game users to gain insight into the decisions and behaviors of the players and to allow further analysis
- The visualization and interaction tool - to collect information from users so that the Knowledge Elicitation Engine (KEE) can learn from user decisions
- A series of interviews with key stakeholders and decision makers – in particular those which might be affected most by a Nexus-compliant implementation of policies, or which behavioral change is central to the achievement of a resource efficient Europe
- Planned contacts with representative persons of the targeted users. Interviews should be carried out by phone or face-to-face when convenient. Interviews should help define the expected functionalities/ services to be offered, test the price that could be acceptable and identify distribution channels to access these clients
- The end-users, potential developers, and partners, etc. will be provided the opportunity to test and review the latest products and services
- Methodology and procedures for sensitive data processing and storing will be specified as a part of the ethics Deliverable 9.1. It is important to emphasize that special efforts will be devoted to anonymizing information and securing accessibility. Mechanisms to delete personal data will be provided in an easy and usable manner

To strengthen further the commitment that the SIM4NEXUS consortium's stakeholders research approach follows good ethical practice and ensures fair and equal power relationships between researchers and participants, the consortium agreed to comply with the principles laid down in the European Code of Conduct for Research Integrity, published by the European Science Foundation⁸. These principles include:

- honesty in communication of the research's goals and intentions, in reporting methods and procedures and in conveying interpretations;
- reliability in performing research;
- objectivity, which requires facts capable of proof, and transparency in the handling of information;
- impartiality and independence;
- openness and accessibility;
- duty of care - all researchers have a duty of care for the humans, animals, the environment or the objects that they study;
- fairness in providing references and giving credit for the work of others; and
- responsibility for the scientists and researchers of the future;
- care will be taken to minimize the potential collection of personal data, e.g. while taking photos and/or videos during events.

⁸ http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_Researchintegrity.pdf

In this regard, SIM4NEXUS has not involve any potentially vulnerable groups or people unable to consent (children, those with a learning disability or cognitive impairment, or individuals in a dependent or unequal relationship), and it has not involve sensitive topics which might induce psychological stress, anxiety or humiliation, deception, or any potential increased danger to participants, or the collection of personal data from participants.

Further, it will not involve the collection or processing of the following types of data:

- Research involving sensitive topics - for example participants' sexual behavior, their illegal or political behavior, their experience of violence, their abuse or exploitation, their mental health, or their gender or ethnic status;
- Research involving groups where permission of a gatekeeper is normally required for initial access to members - for example, ethnic or cultural groups, native peoples or indigenous communities;
- Research involving deception, or which is conducted without participants' full and informed consent at the time the study is carried out;
- Research involving access to records of personal or confidential information, including genetic or other biological information, concerning identifiable individuals;
- Research which would induce psychological stress, anxiety or humiliation or cause more than minimal pain;
- Research involving intrusive interventions - for example, the administration of drugs or other substances, vigorous physical exercise, or techniques such as hypnotherapy. Participants would not encounter such interventions, which may cause them to reveal information, which causes concern, in the course of their everyday life.
- Research involving the tracking or observation of participants (e.g. surveillance or localization data, and WAN data, such as IP address, MACs, etc.). However, 'cookies' are used in the website (www.sim4nexus.eu) and the game to help analyze how users use the site and the game.
- A privacy statement have been defined for the website and the Serious Game regarding the use of cookies and services like Google Analytics to track how many people access the project website or the game respectively. Templates with the Privacy Statements were presented in Deliverable D9.2.
- SIM4NEXUS interview young people on the use of the game; related to this, a code of conduct has been also adopted on interviewing young people. A template with guidelines on interviewing young people were presented in Deliverable D9.2.

With the exception of the privacy statements on the use of the website and of the game, and the Code of Conduct on interviewing young people, none of the data collected by SIM4NEXUS required a notification or authorization for the collection and/or processing of the personal data to authorities or other responsible entities.

In order to ensure that the SIM4NEXUS consortium's participatory research approach follows good ethical practice and ensures fair and equal power relationships between researchers and participants, the consortium signed, made public and implemented an ethics agreement, based on the European Code of Conduct for Research Integrity, published by the European Science Foundation (http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf) and the ethical principles for conducting community-based participatory research, as defined by the National Co-ordinating Centre for Public Engagement of Durham University, UK (www.publicengagement.ac.uk).

6.2 Intellectual Property Rights (IPR)

Intellectual Property Rights (IPR) received special attention from the beginning. All rules regarding management of knowledge and IPR will be governed by the Consortium Agreement (CA). SIM4NEXUS was based on DESCA (Consortium Agreement Model) H2020 model for the Consortium Agreement (CA). SIM4NEXUS has not act in contradiction with the rules laid down in Annex II of the Grant Agreement. The

CA will address background and foreground knowledge, ownership, protected third party components of the products, and protection, use and dissemination of results and access rights.

The following principles have been applied:

- **Confidentiality:** During the project duration and beyond (Section 10 of the GA – nondisclosure of the information for a period of 4 years after the end of the project), the contractors shall treat any information, which is designated as property by the disclosing contractors, as confidential. They also shall impose the same obligations to their employees and suppliers.
- **Pre-existing know how:** Each Contractor is and remains the sole owner of its IPR over its pre-existing know-how. The Contractors identified and list the pre-existing know-how over which they may grant access rights for the project. The Contractors agree that the access rights to the pre-existing know-how needed for carrying out their own work under the project shall be granted on a royalty-free basis.
- **Ownership and protection of knowledge:** The ownership of the knowledge developed within the project has been governed by an open-source license.
- **Open data:** Data and results obtained during the project that are based on open public-sector data has been made available free of charge.

The procedures for the dissemination, protection and exploitation of intellectual property rights (IPR) are clearly covered in the Consortium Agreement (in Section 6: Governance Structure, Sub-section 6.2.4: Veto rights, p 12). The intention has been to balance the requirements necessary to protect such intellectual property and the foreseen dissemination objectives. IPR has been applied according to the rules of the employer under the applicable European and national laws and regulations.

References

Article 43.2 of Regulation (EU) No 1290/2013 of the European Parliament and of the Council, of 11 December 2013, laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006.

Guidelines on Data Management in Horizon 2020,

http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

Hempel, S.; Frieler, K.; Warszawski, L.; Schewe, J. and Piontek, F.: A trend-preserving bias correction – the ISI-MIP approach, *Earth Syst. Dynam.*, 4, 219–236, doi:10.5194/esd-4-219-2013, 2013.

Moss, R. H., Edmonds, J. A., Hibbard, K. A., Manning, M. R., Rose, S. K., van Vuuren, D. P., Carter, T. R., Emori, S., Kainuma, M., Kram, T., Meehl, G. A., Mitchell, J. F. B., Nakicenovic, N., Riahi, K., Smith, S. J., Stouffer, R. J., Thomson, A. M., Weyant, J. P., and Wilbanks, T. J.: The next generation of scenarios for climate change research and assessment, *Nature*, 463, 747–756, doi:10.1038/nature08823, 2010.

Open Access to Scientific Publications and Research Data in Horizon 2020 Guidelines,

https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

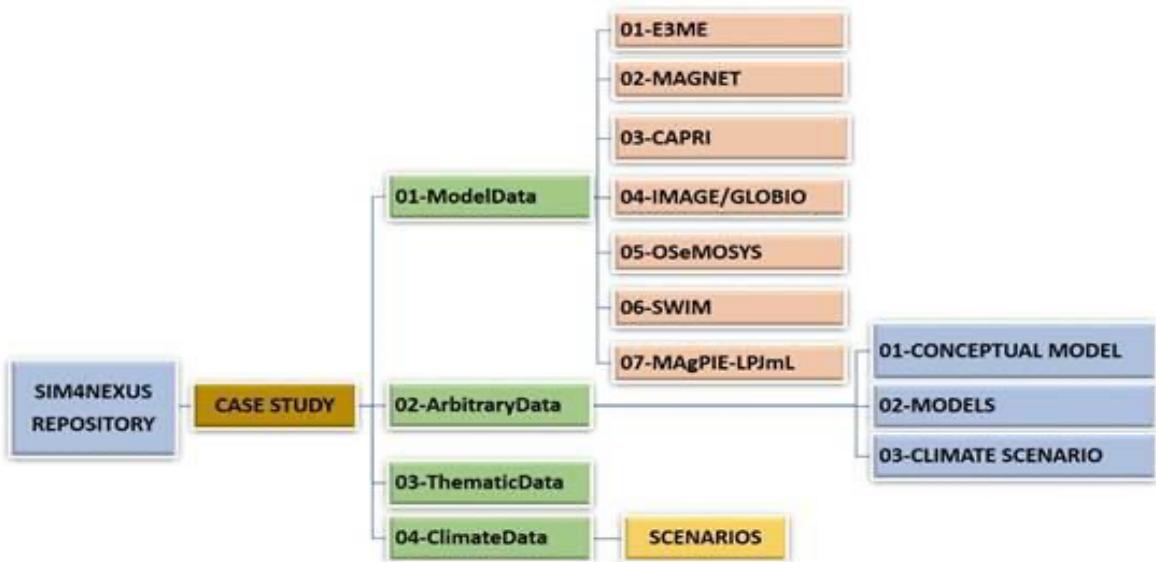
Open Research Data Pilot – ORD pilot: <https://www.openaire.eu/opendatapilot>

SIM4NEXUS Grant agreement & SIM4NEXUS consortium agreement

Taylor, K. E., Stouffer, R. J., and Meehl, G. A.: An overview of CMIP5 and the experiment design, *B. Am. Meteorol. Soc.*, 93, 485–498, doi:10.1175/BAMS-D-11-00094.1, 2012.

7. Annex 1. Models data

ANNEX 1



01-ModelData: should contain outputs from the selected models applied in each case study. The file type of the outputs is either Microsoft Excel Open XML Spreadsheet (.XLSX File Extension) or Comma Separated Values files (.CSV File Extension).

02-ArbitraryData: information about the relevant case Study. This folder should include:
the conceptual model
the concept harmonization process
Climate scenario

03-ThematicData: the thematic datasets of each case study along with its metadata. Here you have to upload the data you use for the SDM (apart from those provided by the thematic models).

04-ClimateData: contains the climate datasets (historical and scenarios) such as precipitation, relative humidity, long-wave downward solar radiation at the ground, long-wave downward solar radiation at the ground, daily maximum air temperature, daily minimum air temperature, and wind speed at 10m height. The datasets in this folder are of a generic file type with .DAT file extension. Each dataset of this type may contain data in binary or text format. A standardised name has been assigned to each dataset in the following format: Country code_Earth System Model_Simulation Method_Period_Time frequency.dat. In this way, all the necessary elements of each dataset such as the way that each dataset has been produced (i.e. model and simulation methods), the addressed area, and the duration and time frequency, will be provided. Each subfolder in the file hosting service should contain files with descriptive information about the available datasets.

Permission asked to release Open Access
Data Provider Approved to release Open Access
Data Provider Denied to release Open Access

ID	Folder- case study	subfolder	File Name	Size (k)	Format	short Description (thematic)	Data Provider	Last Update	time of update	PERMISSION TO RELEASE DATA OPEN ACCESS (Y/N)
1	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][01-CAPRI]	Copy of capri_data_Greece_2030.xlsx	31.7	xlsx	capri output 2030	CAPRI??	06/02/2017	11:58	
2	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][01-CAPRI]	Copy of capri_data_Greece_2010_edited.xlsx	29.8	xlsx	Capri output 2010	CAPRI??	03/08/2017	17:07	
3	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][01-CAPRI]	Copy of capri_data_Greece_2010.xlsx	24.1	xlsx	Capri output 2010	CAPRI??	24/07/2017	17:29	
4	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][02-GTAP]	SP2_2030_Greece.xlsx	106.4	xlsx	SP2 2030 Greece	GTAP	21/03/2017	14:37	
5	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][03-E3ME data]	E3ME Baseline data for Greece V2.csv	62.5	csv	E3ME output baseline V2	IE, UCAM (Eva Alexandri)	23/08/2017	15:31	
6	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][03-E3ME data]	E3ME Baseline data for Greece.csv	17	csv	E3ME output baseline V3	IE, UCAM (Eva Alexandri)	24/07/2017	17:33	
7	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][04-OseMOSYS data]	Power plant codes.pdf	203.5	pdf	Power plant codes		12/12/2017	14:17	
8	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][04-OseMOSYS data]	DSeMOSYS_Results_December_Update2050.xlsx	11.7	xlsx	DSEMOsys results Greece	DSeMOSYS	22/12/2017	19:45	
9	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][04-OseMOSYS data]	Input_Data_Electricity model of Greece_OseMOSYS_Updated_2050.xlsx	5100	xlsx	Osemosys input Greece	DSeMOSYS	14/12/2017	18:34	
10	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][04-OseMOSYS data]	Greece_RES_Electricity system.pptx	52.4	pptx	Greece RES Electricity system	DSeMOSYS	12/11/2017	00:51	
11	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[01-ModelData][05-MAGNET]	MAGNET_Baseline_Greece_260_917.xlsx	15	xlsx	MAGNET results Greece	MAGNET	29/09/2017	18:32	
12	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[02-ArbitraryData][01-ConceptualModel]	Greece-SIM4NEXUS conceptual_framework_03_03_2017.pptx	77.5	pptx	Conceptual Model Greece V2	Case study	21/03/2018	14:38	
13	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[02-ArbitraryData][01-ConceptualModel]	Greece-SIM4NEXUS conceptual_framework_v1.pptx	38.5	pptx	Conceptual Model Greece V1	Case study	06/02/2017	17:06	
14	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[02-ArbitraryData][01-ConceptualModel]	Greece-SIM4NEXUS conceptual_framework_v4_24_03_2017.pptx	55	pptx	Conceptual Model Greece final version	Case study	24/03/2017	11:49	
15	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[02-ArbitraryData][02-Models]	model harmonization.xlsx	8.5	xlsx	Model harmonization Greece		30/01/2017	15:48	
16	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	SolarRad unit Conversion.pdf	47.2	pdf			01/03/2018	00:27	
17	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	readme_PIK_data.tif	1.1	tif	PIK		28/02/2018	17:36	
18	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Jensen and Haise formula example.png	317.2	png			01/03/2018	15:16	
19	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Jensen and Haise formula.png	522.4	png			01/03/2018	00:32	
20	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Jensen and Haise.pdf	128.8	pdf			01/03/2018	00:32	
21	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	17.5	dat	kr_pr_NorESM1-M_historical_1961-2005_monthly.dat	PIK	17/02/2017	17:07	
22	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.5	dat	kr_pr_NorESM1-M_rcp2p6_2006-2099_monthly.dat	PIK	06/10/2017	02:51	
23	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.5	dat	kr_pr_NorESM1-M_rcp4p5_2006-2099_monthly.dat	PIK	06/10/2017	05:45	
24	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.5	dat	kr_pr_NorESM1-M_rcp6p0_2006-2099_monthly.dat	PIK	06/10/2017	08:41	
25	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.5	dat	kr_pr_NorESM1-M_rcp8p5_2006-2099_monthly.dat	PIK	06/10/2017	11:42	
26	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	17.4	dat	kr_rhs_NorESM1-M_historical_1961-2005_monthly.dat	PIK	17/02/2017	17:56	
27	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rhs_NorESM1-M_rcp2p6_2006-2099_monthly.dat	PIK	06/10/2017	04:19	
28	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rhs_NorESM1-M_rcp4p5_2006-2099_monthly.dat	PIK	06/10/2017	07:13	
29	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rhs_NorESM1-M_rcp6p0_2006-2099_monthly.dat	PIK	06/10/2017	10:11	
30	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rhs_NorESM1-M_rcp8p5_2006-2099_monthly.dat	PIK	06/10/2017	13:21	
31	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	17.4	dat	kr_rlds_NorESM1-M_historical_1961-2005_monthly.dat	PIK	17/02/2017	17:19	
32	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rlds_NorESM1-M_rcp2p6_2006-2099_monthly.dat	PIK	06/10/2017	03:13	
33	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rlds_NorESM1-M_rcp4p5_2006-2099_monthly.dat	PIK	06/10/2017	06:07	
34	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rlds_NorESM1-M_rcp6p0_2006-2099_monthly.dat	PIK	06/10/2017	09:03	
35	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rlds_NorESM1-M_rcp8p5_2006-2099_monthly.dat	PIK	06/10/2017	12:05	
36	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	17.4	dat	kr_rds_NorESM1-M_historical_1961-2005_monthly.dat	PIK	17/02/2017	17:31	
37	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rds_NorESM1-M_rcp2p6_2006-2099_monthly.dat	PIK	06/10/2017	03:35	
38	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rds_NorESM1-M_rcp4p5_2006-2099_monthly.dat	PIK	06/10/2017	06:29	
39	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rds_NorESM1-M_rcp6p0_2006-2099_monthly.dat	PIK	06/10/2017	09:26	
40	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_rds_NorESM1-M_rcp8p5_2006-2099_monthly.dat	PIK	06/10/2017	12:29	
41	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	17.4	dat	kr_tas_NorESM1-M_historical_1961-2005_monthly.dat	PIK	17/02/2017	16:31	
42	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_tas_NorESM1-M_rcp2p6_2006-2099_monthly.dat	PIK	06/10/2017	01:48	
43	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_tas_NorESM1-M_rcp4p5_2006-2099_monthly.dat	PIK	06/10/2017	04:41	
44	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_tas_NorESM1-M_rcp6p0_2006-2099_monthly.dat	PIK	06/10/2017	07:35	
45	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	36.3	dat	kr_tas_NorESM1-M_rcp8p5_2006-2099_monthly.dat	PIK	06/10/2017	10:35	
46	SIM4NEXUS-GREEK_CASE_STUDY	SIM4NEXUS-GREEK_CASE_STUDY[04-ClimateData]	Scenarios\kr_NorESM1-M monthly.zip	17.4	dat	kr_tasmax_NorESM1-M_historical_1961-2005_monthly.dat	PIK	17/02/2017	16:45	

		SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	src.dir	1.1	dir	physical system input SARdem	JNISST?	29/01/2017	19:42
689	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	w001001.adf	45.5	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
690	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	w001001.adf	4400	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
691	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	at.adf	14.1	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
692	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	ata.adf	0.032	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
693	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	arj.adf	0.738	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
694	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	bg	0.284	og	physical system input SARdem	JNISST?	29/01/2017	19:42
695	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	bndr.adf	0.308	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
696	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	tblbnd.adf	0.032	adf	physical system input SARdem	JNISST?	29/01/2017	19:42
697	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	dams_utm.shx	0.42	shp	physical system input SARdem	JNISST?	17/12/2016	03:05
698	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\SARdem_JTM\srtrt_100]	dams_utm.shp	1.1	shp	physical system input SARdem	JNISST?	17/12/2016	03:05
700	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_utm.sbx	0.148	sbx	physical system input SARdem	JNISST?	17/12/2016	03:00
701	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_utm.sbn	0.524	sbn	physical system input SARdem	JNISST?	17/12/2016	03:00
702	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_utm.prj	0.4	prj	physical system input SARdem	JNISST?	17/12/2016	03:00
704	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_utm.dbf	11.8	dbf	physical system input SARdem	JNISST?	30/01/2017	00:30
705	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_geog.shx	0.42	shx	physical system input SARdem	JNISST?	17/12/2016	03:06
706	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_geog.shp	1.1	shp	physical system input SARdem	JNISST?	17/12/2016	03:06
707	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_geog.sbx	0.148	sbx	physical system input SARdem	JNISST?	17/12/2016	03:06
708	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_geog.sbn	0.524	sbn	physical system input SARdem	JNISST?	17/12/2016	03:06
709	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_geog.prj	0.145	prj	physical system input SARdem	JNISST?	17/12/2016	03:06
710	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS02_physcal_system_input\SARdem_UTM\srtrt_100]	dams_geog.dbf	12.2	dbf	physical system input SARdem	JNISST?	30/01/2017	00:38
711	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS03_conceptual_results	FastTrackOutputs_26_04_2017.xlsx	45.6	xlsx	2010 baseline, 2030 RCP45, RCP85	JNISST?	11/05/2017	01:51
712	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\02_conceptual_UNISS03_conceptual_results	conceptual_model_sardinia.docx	29.4	docx	Conceptual model input/output data for fast track Sardinia metadata file	JNISST?	11/05/2017	11:35
713	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\03_E3ME	E3ME.csv	13.7	csv	E3ME outputs	CE, UCAM (Eva Alexandri)	06/02/2017	17:18
714	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\04_GTPA	Copy of SSP2_2030_Italy.xlsx	71.9	xlsx	GTAP outputs	WUR-LEI??	30/01/2017	18:08
715	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM	SDM_metadata.docx	13.2	docx	readme file	Medhi Exeter??	11/05/2017	11:27
716	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM	sardinia reservoir model_S4N Fast Track.STMX	42.5	STMX	reservoir model	Medhi Exeter??	11/05/2017	07:57
717	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM	sardinia reservoir model_S4N Fast Track.lsd	77	lsdb	reservoir model	Medhi Exeter??	11/05/2017	07:51
718	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Rdata	26	R_data	R script related file	Medhi Exeter??	15/03/2017	16:59
719	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Rhistory	29.4	Rhistory	R script related file	Medhi Exeter??	15/03/2017	16:59
720	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Converted_R_Script.R	5.5	R	R script related file	Medhi Exeter??	15/03/2017	16:52
721	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Agri_energy_demand.csv	0.189	csv	output from STELLA to R conversion agri-energy	Medhi Exeter??	14/03/2017	10:06
722	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Citrus.csv	0.147	csv	output from STELLA to R conversion citrus	Medhi Exeter??	14/03/2017	10:06
723	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Domestic_energy_demanda.csv	0.193	csv	output from STELLA to R conversion domestic-energy	Medhi Exeter??	14/03/2017	10:06
724	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_ET_open_body.csv	0.186	csv	output from STELLA to R conversion ET	Medhi Exeter??	14/03/2017	10:06
725	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Fruit.csv	0.146	csv	output from STELLA to R conversion fruit	Medhi Exeter??	14/03/2017	10:06
726	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Functions.R	3.7	R	output from STELLA to R conversion functions	Medhi Exeter??	14/03/2017	10:06
727	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Grape.csv	0.142	csv	output from STELLA to R conversion grape	Medhi Exeter??	14/03/2017	10:06
728	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Industrial.csv	0.231	csv	output from STELLA to R conversion industrial	Medhi Exeter??	14/03/2017	10:06
729	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Maize.csv	0.142	csv	output from STELLA to R conversion maize	Medhi Exeter??	14/03/2017	10:06
730	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Oat.csv	0.139	csv	output from STELLA to R conversion oat	Medhi Exeter??	14/03/2017	10:06
731	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Olive.csv	0.145	csv	output from STELLA to R conversion olive	Medhi Exeter??	14/03/2017	10:06
732	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Pasture.csv	0.157	csv	output from STELLA to R conversion pasture	Medhi Exeter??	14/03/2017	10:06
733	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Potato.csv	0.142	csv	output from STELLA to R conversion potato	Medhi Exeter??	14/03/2017	10:06
734	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_PTable.csv	0.18	csv	output from STELLA to R conversion precipitation	Medhi Exeter??	14/03/2017	10:06
735	SIM4NEXUS-FastTrack-Sardinia	SIM4NEXUS-FastTrack-Sardinia\01-ModelDATA\05-SDM\BaselineTest.rar	Stella_Data_Rice.csv	0.143	csv	output from STELLA to R conversion rice	Medhi Exeter??	14/03/2017	10:06

		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_rsds_NorESM1-M_rcp2p6_2006-2099_monthly.dat	740,2	dat	uk_rsds_NorESM1-M_rcp2p6_2006-2099_monthly	PjK	12/11/2017	6:15
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_rsds_NorESM1-M_rcp4p5_2006-2099_monthly.dat	740,2	dat	uk_rsds_NorESM1-M_rcp4p5_2006-2099_monthly	PjK	12/11/2017	9:20
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_rsds_NorESM1-M_rcp6p0_2006-2099_monthly.dat	740,2	dat	uk_rsds_NorESM1-M_rcp6p0_2006-2099_monthly	PjK	12/11/2017	12:25
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_rsds_NorESM1-M_rcp8p5_2006-2099_monthly.dat	740,2	dat	uk_rsds_NorESM1-M_rcp8p5_2006-2099_monthly	PjK	12/11/2017	15:31
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tas_NorESM1-M_rcp2p6_2006-2099_monthly.dat	740,2	dat	uk_tas_NorESM1-M_rcp2p6_2006-2099_monthly	PjK	12/11/2017	4:19
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tas_NorESM1-M_rcp4p5_2006-2099_monthly.dat	740,2	dat	uk_tas_NorESM1-M_rcp4p5_2006-2099_monthly	PjK	12/11/2017	7:26
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tas_NorESM1-M_rcp6p0_2006-2099_monthly.dat	740,2	dat	uk_tas_NorESM1-M_rcp6p0_2006-2099_monthly	PjK	12/11/2017	10:31
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tas_NorESM1-M_rcp8p5_2006-2099_monthly.dat	740,2	dat	uk_tas_NorESM1-M_rcp8p5_2006-2099_monthly	PjK	12/11/2017	13:37
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmax_NorESM1-M_rcp2p6_2006-2099_monthly.dat	740,2	dat	uk_tasmax_NorESM1-M_rcp2p6_2006-2099_monthly	PjK	12/11/2017	4:43
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmax_NorESM1-M_rcp4p5_2006-2099_monthly.dat	740,2	dat	uk_tasmax_NorESM1-M_rcp4p5_2006-2099_monthly	PjK	12/11/2017	7:49
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmax_NorESM1-M_rcp6p0_2006-2099_monthly.dat	740,2	dat	uk_tasmax_NorESM1-M_rcp6p0_2006-2099_monthly	PjK	12/11/2017	10:54
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmax_NorESM1-M_rcp8p5_2006-2099_monthly.dat	740,2	dat	uk_tasmax_NorESM1-M_rcp8p5_2006-2099_monthly	PjK	12/11/2017	14:00
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmin_NorESM1-M_rcp2p6_2006-2099_monthly.dat	740,3	dat	uk_tasmin_NorESM1-M_rcp2p6_2006-2099_monthly	PjK	12/11/2017	17:06
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmin_NorESM1-M_rcp4p5_2006-2099_monthly.dat	740,3	dat	uk_tasmin_NorESM1-M_rcp4p5_2006-2099_monthly	PjK	12/11/2017	8:13
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmin_NorESM1-M_rcp6p0_2006-2099_monthly.dat	740,3	dat	uk_tasmin_NorESM1-M_rcp6p0_2006-2099_monthly	PjK	12/11/2017	11:18
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_tasmin_NorESM1-M_rcp8p5_2006-2099_monthly.dat	740,3	dat	uk_tasmin_NorESM1-M_rcp8p5_2006-2099_monthly	PjK	12/11/2017	14:24
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_wind_NorESM1-M_rcp2p6_2006-2099_monthly.dat	740,2	dat	uk_wind_NorESM1-M_rcp2p6_2006-2099_monthly	PjK	12/11/2017	6:38
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_wind_NorESM1-M_rcp4p5_2006-2099_monthly.dat	740,2	dat	uk_wind_NorESM1-M_rcp4p5_2006-2099_monthly	PjK	12/11/2017	9:43
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_wind_NorESM1-M_rcp6p0_2006-2099_monthly.dat	740,2	dat	uk_wind_NorESM1-M_rcp6p0_2006-2099_monthly	PjK	12/11/2017	12:49
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_2006-2099_monthly.zip]	uk_wind_NorESM1-M_rcp8p5_2006-2099_monthly.dat	740,2	dat	uk_wind_NorESM1-M_rcp8p5_2006-2099_monthly	PjK	12/11/2017	15:55
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_pr_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_pr_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	19:31
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_rhs_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_rhs_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	20:18
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_rlds_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_rlds_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	19:43
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_rsds_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_rsds_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	19:54
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_tas_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_tas_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	18:59
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_tasmax_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_tasmax_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	19:10
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_tasmin_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_tasmin_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	19:22
		SIM4NEXUS-UK_Case_Study\04_Climate Data\Scenarios\uk_NorESM1-M_historical_1961-2005_monthly.zip]	uk_wind_NorESM1-M_historical_1961-2005_monthly.dat	354,4	dat	uk_wind_NorESM1-M_historical_1961-2005_monthly	PjK	10/11/2017	20:06
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\01-ModelData01-CAPRI]	capri_baseline_Andalusia.xlsx	26,9	xlsx	capri_baseline_Andalusia output	JPM	26/9/2017	13:54
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\01-ModelData02-GTAP]	SP2_2030_Spain.xlsx	140,4	xlsx	SP2_2030_Spain output	GTAP	14/7/2017	16:05
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\01-ModelData03-E3ME]	Andalusia_BaselineV2.csv	36,5	csv	Andalusia_BaselineV2 E3ME output	IE, UCAM (Eva Alexandri)	9/8/2017	12:09
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\01-ModelData03-E3ME]	Andalusia_Baseline.csv	34,8	csv	Andalusia_Baseline E3ME output	IE, UCAM (Eva Alexandri)	28/7/2017	12:13
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\02-ArbitraryData01-ConceptualModel]	70904_conceptual_model_Andalusia.pptx	1400	pptx	conceptual_model_Andalusia	JPM	25/9/2017	14:50
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\02-ArbitraryData01-ConceptualModel]	i-Jusnik.pptx	1400	pptx	conceptual_model_Andalusia	JPM	25/9/2017	14:50
		SIM4NEXUS-ANDALUSIA_CASE_STUDY\02-ArbitraryData01-ConceptualModel]	70717_conceptual_model_Andalusia.pptx	61,2	pptx	conceptual_model_Andalusia	JPM	25/9/2017	14:50

1357	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\02-ArbitraryData\01-ConceptualModel]	\070703_conceptual_model_Andalusia.pptx	1200	pptx	conceptual_model_Andalusia	JPM	25/9/2017	14:50	
1358	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\02-ArbitraryData\01-ConceptualModel]	\070703_conceptual_model_Andalusia.pptx	58.3	pprx	conceptual_model_Andalusia	JPM	25/9/2017	14:50	
1359	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\02-ArbitraryData\01-ConceptualModel]	\070626_conceptual_model_Andalusia.pptx	51.2	pprx	conceptual_model_Andalusia	JPM	25/9/2017	14:50	
1360	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\water_supply_by_user.xlsx	9.7	xlsx	water_supply_by_user_Andalusia	JPM	22/9/2017	16:30	
1361	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\water_supply.xlsx	9.3	xlsx	water_supply_Andalusia	JPM	22/9/2017	16:31	
1362	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\water_demand_supply_2012-2021.xlsx	27.9	xlsx	water_demand_supply_2012-2021	JPM	13/9/2017	18:31	
1363	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\oil_losses_andalusia_1976-2014.xlsx	9.3	xlsx	oil_losses_andalusia_1976-2014	JPM	13/9/2017	18:31	
1364	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\reused_water_by_sector.xlsx	8.9	xlsx	reused_water_by_sector_Andalusia	JPM	19/9/2017	18:37	
1365	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\rain_erosion_by_province_2004-2014.xlsx	17	xlsx	rain_erosion_by_province_2004-2014_Andalusia	JPM	13/9/2017	18:31	
1366	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\and_use_by_province_2013.xlsx	77.5	xlsx	and_use_by_province_2013_Andalusia	JPM	13/9/2017	18:31	
1367	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\estimated_water_demand_per_river_basin_2015.xlsx	11.2	xlsx	estimated_water_demand_per_river_basin_2015_Andalusia	JPM	3/10/2017	19:36	
1368	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\03-ThematicData]	\energy_balance_andalusia_by_source_2000-2015.xlsx	115.7	xlsx	energy_balance_andalusia_by_source_2000-2015_Andalusia	JPM	13/9/2017	18:31	
1369	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_pr_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_pr_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	12:00	
1370	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_rlds_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_rlds_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	11:11	
1371	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_rds_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_rds_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	12:21	
1372	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_tas_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_tas_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	11:28	
1373	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_tasmax_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_tasmax_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	11:39	
1374	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_tasmin_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_tasmin_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	11:50	
1375	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_historical_1961-2005_monthly.zip]	\al_wind_GFDL-ESM2M_histological_1961-2005_monthly.dat	1200	dat	al_wind_GFDL-ESM2M_histological_1961-2005_monthly	PiK	11/7/2017	12:32	
1376	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_pr_GFDL-ESM2M_rcp2p6_2006-2099_monthly.dat	2500	dat	al_pr_GFDL-ESM2M_rcp2p6_2006-2099_monthly	PiK	11/7/2017	12:49	
1377	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_pr_GFDL-ESM2M_rcp4p5_2006-2099_monthly.dat	2500	dat	al_pr_GFDL-ESM2M_rcp4p5_2006-2099_monthly	PiK	11/7/2017	15:07	
1378	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_pr_GFDL-ESM2M_rcp6p0_2006-2099_monthly.dat	2500	dat	al_pr_GFDL-ESM2M_rcp6p0_2006-2099_monthly	PiK	11/7/2017	18:12	
1379	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_pr_GFDL-ESM2M_rcp8p5_2006-2099_monthly.dat	2500	dat	al_pr_GFDL-ESM2M_rcp8p5_2006-2099_monthly	PiK	11/7/2017	21:38	
1380	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp2p6_2006-2099_monthly.dat	0.038	dat	al_rhs_GFDL-ESM2M_rcp2p6_2006-2099_monthly	PiK	11/7/2017	13:53	
1381	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp4p5_2006-2099_monthly.dat	0.038	dat	al_rhs_GFDL-ESM2M_rcp4p5_2006-2099_monthly	PiK	11/7/2017	16:22	
1382	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp6p0_2006-2099_monthly.dat	0.038	dat	al_rhs_GFDL-ESM2M_rcp6p0_2006-2099_monthly	PiK	11/7/2017	19:46	
1383	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp8p5_2006-2099_monthly.dat	0.038	dat	al_rhs_GFDL-ESM2M_rcp8p5_2006-2099_monthly	PiK	11/7/2017	23:16	
1384	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rds_GFDL-ESM2M_rcp2p6_2006-2099_monthly.dat	2500	dat	al_rds_GFDL-ESM2M_rcp2p6_2006-2099_monthly	PiK	11/7/2017	13:12	
1385	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rds_GFDL-ESM2M_rcp4p5_2006-2099_monthly.dat	2500	dat	al_rds_GFDL-ESM2M_rcp4p5_2006-2099_monthly	PiK	11/7/2017	15:28	
1386	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rds_GFDL-ESM2M_rcp6p0_2006-2099_monthly.dat	2500	dat	al_rds_GFDL-ESM2M_rcp6p0_2006-2099_monthly	PiK	11/7/2017	18:43	
1387	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rds_GFDL-ESM2M_rcp8p5_2006-2099_monthly.dat	2500	dat	al_rds_GFDL-ESM2M_rcp8p5_2006-2099_monthly	PiK	11/7/2017	22:10	
1388	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp2p6_2006-2099_monthly.dat	2500	dat	al_rhs_GFDL-ESM2M_rcp2p6_2006-2099_monthly	PiK	11/7/2017	13:32	
1389	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp4p5_2006-2099_monthly.dat	2500	dat	al_rhs_GFDL-ESM2M_rcp4p5_2006-2099_monthly	PiK	11/7/2017	15:52	
1390	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp6p0_2006-2099_monthly.dat	2500	dat	al_rhs_GFDL-ESM2M_rcp6p0_2006-2099_monthly	PiK	11/7/2017	19:14	
1391	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_rhs_GFDL-ESM2M_rcp8p5_2006-2099_monthly.dat	2500	dat	al_rhs_GFDL-ESM2M_rcp8p5_2006-2099_monthly	PiK	11/7/2017	22:43	
1392	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_tas_GFDL-ESM2M_rcp2p6_2006-2099_monthly.dat	2500	dat	al_tas_GFDL-ESM2M_rcp2p6_2006-2099_monthly	PiK	11/7/2017	11:48	
1393	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_tas_GFDL-ESM2M_rcp4p5_2006-2099_monthly.dat	2500	dat	al_tas_GFDL-ESM2M_rcp4p5_2006-2099_monthly	PiK	11/7/2017	14:13	
1394	SIM4NEXUS-ANDALUSIA-CASE_STUDY	SIM4NEXUS-Andalusia_Case_Study\04-ClimaticData\Scenarios\al_GFDL-ESM2M_scenarios_2006-2099_monthly.zip]	\al_tas_GFDL-ESM2M_rcp6p0_2006-2099_monthly.dat	2500	dat	al_tas_GFDL-ESM2M_rcp6p0_2006-2099_monthly	PiK	11/7/2017	16:51	



2190	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_rsd5_NorESM1-M_rcp8p5_2006-2099_monthly.dat	2100	dat	nl_rsd5_NorESM1-M_rcp8p5_2006-2099_monthly	PIK	8/2/2018	12:22	
2191	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tas_NorESM1-M_rcp2p6_2006-2099_monthly.dat	2100	dat	nl_tas_NorESM1-M_rcp2p6_2006-2099_monthly	PIK	8/2/2018	1:10	
2192	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tas_NorESM1-M_rcp4p5_2006-2099_monthly.dat	2100	dat	nl_tas_NorESM1-M_rcp4p5_2006-2099_monthly	PIK	8/2/2018	4:14	
2193	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tas_NorESM1-M_rcp6p0_2006-2099_monthly.dat	2100	dat	nl_tas_NorESM1-M_rcp6p0_2006-2099_monthly	PIK	8/2/2018	7:24	
2194	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tas_NorESM1-M_rcp8p5_2006-2099_monthly.dat	2100	dat	nl_tas_NorESM1-M_rcp8p5_2006-2099_monthly	PIK	8/2/2018	10:30	
2195	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmax_NorESM1-M_rcp2p6_2006-2099_monthly.dat	2100	dat	nl_tasmax_NorESM1-M_rcp2p6_2006-2099_monthly	PIK	8/2/2018	1:33	
2196	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmax_NorESM1-M_rcp4p5_2006-2099_monthly.dat	2100	dat	nl_tasmax_NorESM1-M_rcp4p5_2006-2099_monthly	PIK	8/2/2018	4:38	
2197	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmax_NorESM1-M_rcp6p0_2006-2099_monthly.dat	2100	dat	nl_tasmax_NorESM1-M_rcp6p0_2006-2099_monthly	PIK	8/2/2018	7:47	
2198	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmax_NorESM1-M_rcp8p5_2006-2099_monthly.dat	2100	dat	nl_tasmax_NorESM1-M_rcp8p5_2006-2099_monthly	PIK	8/2/2018	10:53	
2199	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmin_NorESM1-M_rcp2p6_2006-2099_monthly.dat	2100	dat	nl_tasmin_NorESM1-M_rcp2p6_2006-2099_monthly	PIK	8/2/2018	1:56	
2200	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmin_NorESM1-M_rcp4p5_2006-2099_monthly.dat	2100	dat	nl_tasmin_NorESM1-M_rcp4p5_2006-2099_monthly	PIK	8/2/2018	5:02	
2201	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmin_NorESM1-M_rcp6p0_2006-2099_monthly.dat	2100	dat	nl_tasmin_NorESM1-M_rcp6p0_2006-2099_monthly	PIK	8/2/2018	8:11	
2202	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_tasmin_NorESM1-M_rcp8p5_2006-2099_monthly.dat	2100	dat	nl_tasmin_NorESM1-M_rcp8p5_2006-2099_monthly	PIK	8/2/2018	11:15	
2203	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_wind_NorESM1-M_rcp2p6_2006-2099_monthly.dat	2100	dat	nl_wind_NorESM1-M_rcp2p6_2006-2099_monthly	PIK	8/2/2018	3:26	
2204	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_wind_NorESM1-M_rcp4p5_2006-2099_monthly.dat	2100	dat	nl_wind_NorESM1-M_rcp4p5_2006-2099_monthly	PIK	8/2/2018	6:35	
2205	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_wind_NorESM1-M_rcp6p0_2006-2099_monthly.dat	2100	dat	nl_wind_NorESM1-M_rcp6p0_2006-2099_monthly	PIK	8/2/2018	9:45	
2206	SIM4NEXUS-NETHERLANDS-CASE_STUDY	SIM4NEXUS-NETHERLANDS-CASE_STUDY\04-ClimateData\Scenarios\NL_NorESM1-M_2006-2099_monthly.zip]	nl_wind_NorESM1-M_rcp8p5_2006-2099_monthly.dat	2100	dat	nl_wind_NorESM1-M_rcp8p5_2006-2099_monthly	PIK	8/2/2018	12:46	