How to Efficiently Turn Your Paper into a Joint Program Report: The JP LaTeX Template Version 1.2

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Abstract

This note documents version 1.2 of the JP LaTeX template for creating papers submitted to the MIT Joint Program Report Series. This template provides an efficient and rapid way to produce a JP Report that is consistent with current formatting guidelines. It manages the entire layout and format parameters of your document including the title page, abstract, section headings, figure and table captions, footnotes, acknowledgements, appendices, and the bibliography. All files required to generate this document are available on the JP Wiki webpage.

Contents

1. INTRODUCTION

This note documents version 1.2 of the JP LaTeX template that provides an efficient and rapid way to turn your research paper into a JP Report. This template formats your document to be consistent with the official formatting guidelines of the MIT Joint Program Report Series. Most importantly, it frees up additional research time by avoiding resource-intensive battles with MS-Word. This template is based on the word processing software LaTeX, which is open source software; the latest version of the JP LaTeX template is available online at the JP Wiki page.

This note is primarily concerned with providing an alternative option to format your JP Report. As such, it should be seen as complementing the existing MS-Word-JP template document "*JP*

[*] Author affiliation should go here, *e.g.*, Joint Program of the Science and Policy of Global Change, Massachusetts Institute of Technology, Cambridge, MA. *This is Version 1.2 of this guide, last udated May 24, 2012.*
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Report Preparation Guidelines for Authors" by Anne Slinn and Gwendolyn Kelso. The remainder of this document showcases the LaTeX template and provides a brief description of how to implement this new package. If there are suggestions for how to improve the usefulness or accuracy of this template, or the accompanying template document, please email comments to the authors of this note.

2. FILE STRUCTURE OF THE JP LaTeX PACKAGE

The JP LaTeX package can be found on the JP Wiki Report Series Information webpage. It consists of the following files:

- A file called *JP_Report_formatting.tex* controls all formatting and layout parameters. Do not modify this file and keep it in the same directory as your JP report!
- A file called *JP_Report_template.tex*. This is the core file that was used to create the PDF file called *JP_Report_template.pdf* that you are currently reading. You can use it as a template by inserting the text of your report.
- A file called *template_bibliography.bib*. This file contains the bibliography items used in this document and serves as a template for your JP report bibliography. This file should be stored in the same directory as your JP report. You can add references here following the format described in the bibliography section of this document.
- A file called *jpreport.bst* defines the style of the bibliography. Do not modify this file and keep it in the same directory as your JP report!

3. SUBMISSION GUIDELINES

Joint Program Reports are usually required to be authored (or co-authored) by personnel affiliated with the Joint Program. The content is generally expected to be an article that has been prepared for submission to a peer-reviewed outlet (journal or book chapter).

The general procedure for contributing a paper to the Report Series is the following:

1. Authors should first confer with John Reilly (Policy/Economics) or Anne Slinn (Science) to determine if the paper is suitable to be included in the Report Series.
2. If given the "go-ahead", authors prepare their paper for production according to the guidelines in this document. Authors are individually responsible for the proper formatting and editing of their papers.
3. The author will then email the "print-ready" paper as a PDF file to Fran Goldstein (fkg@mit.edu) for format review. The paper must be delivered in PDF format. LaTeX allows you to directly create a PDF document from the source code. Please ensure that all graphics in the PDF document are sharp and clear images. (The process of saving as, or converting to, a PDF file may involve option-settings that can default to 'down-sampling' graphics, which reduces image quality/resolution to reduce file-size.) If the paper meets all formatting criteria, it will go into the production process.

4. If the paper does not match the formatting criteria (unlikely to be the case if you use this new template *without* modifying it, and if you know how to use LaTeX), it will be sent back to the author for correction (may take several rounds).

4. BASIC FUNCTIONALITIES OF THE JP LaTeX PACKAGE

4.1 Headings

To do a section, subsection, or subsubsection heading, simply type:

```
\section{Headings}
\subsection{Headings}
\subsection{Headings}
```

The format of the headings (font size, capitalization, font type, numbering, spacing before and after the heading etc.) is controlled by the template.

4.1.1 Paragraph Attributes

A new paragraph is specified by typing:

```
\par
```

4.2 Specific Sections

4.2.1 Title Page

The whole title page including the title of the paper, the author list, abstract, and table of contents is created automatically. Simply insert the information in the respective customized fields:

```
\title{}
\author{}
\affil{}
\abstract{}
```

4.2.2 Table of Contents

The table of contents together with the page numbers is generated automatically from the section headings included in the document by the command *toc*. Do not remove that command from the template.

4.2.3 Tables

An example how to generate the following **Table B1** can be found in the source code. To reference a table the command is as follows. First, create a label for the table as in:

```
\label{table:label}
```

Then any reference to this table can be made by:

```
Table \ref{table:label}
```

Boldface the first reference to a table in the text by using the command

```
\textbf{Table \ref{table:label}}
```

Table 1. Regional Price Elasticities for Fuel Supply and Electricity Demand.

Region	η_r^z (simulated) [a]		ϵ_r (simulated) [a]	ϵ_r (estimated)
	Coal	Natural gas		
CA	0.01	0.02	−50.47	−0.25
ERCOT	0.01	0.04	−0.435	−0.15
MISO	0.03	0.01	−0.24	−0.14
MOUNT	0.01	0.02	−0.37	−0.20
NENGL	0.01	0.01	−0.72	−0.19
NWPP	0.09	0.01	−0.43	−0.23
NY	0.01	0.01	−0.17	−0.10
PJM	0.04	0.01	−0.23	−0.22
SEAST	0.05	0.01	−0.32	−0.25
SPP	0.01	0.01	−0.50	−0.15

4.2.4 Figures

An example how to generate the following **Figure 1** can be found in the source code. To reference a figure the command is as follows. First, create a label for the figure as in:

```
\label{fig:label_name}
```

Then any reference to this table can be made by:

```
Figure \ref{fig:label_name}
```

Boldface the first reference to a figure in the text by using the command:

```
\textbf{Figure \ref{fig:label_name}}
```

4.2.5 Equations

Creating equations in LaTeX is simple. You can find the LaTeX coding following equations in the source code of this document:

$$\mathrm{ELE}_r^{\mathrm{F}} + \sum_{\mathrm{NF}} \mathrm{ELE}_r^{\mathrm{NF}} = \mathrm{D}_r^{\mathrm{ELE}} \quad \perp \quad P_r^{\mathrm{ELE}} \tag{1}$$

$$\frac{\partial \overline{u}}{\partial t} = f\overline{v}^{\star} - \frac{\overline{v}^{\star}}{a\cos\phi}\frac{\partial}{\partial\phi}\left(\overline{u}\cos\phi\right) - \overline{w}^{\star}\overline{u}_z + \frac{1}{\rho_0 a\cos\phi}\nabla\cdot\vec{F} + \overline{X} \tag{2}$$

For more details on the full functionality of the math package go and read the documentation at: ftp://ftp.ams.org/pub/tex/doc/amsmath/amsldoc.pdf.

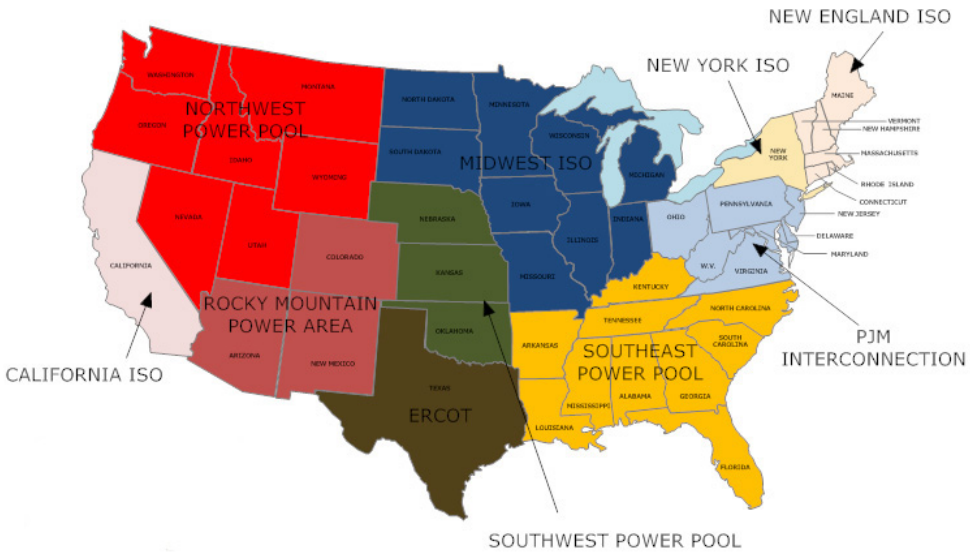

Figure 1. U.S. Regions in Integrated Economic-Electricity Model.

4.2.6 Footnotes

To do footnotes[1], simply type:

```
\footnote{This is footnote text This is footnote text.}
```

4.2.7 Acknowlegments

The acknowledgments go right before the bibliography using the following command:

```
\acknowledgments{}
```

4.2.8 Bibliography

You can store your bibliography in BIBTEX format and call it using the following command, which should be placed after the acknowledgments but before the appendices:

```
\bibliography{name_of_bibliography_file}
```

The reference is then cited using the commands `\citet` and `\citep` for textual and parenthetical citations, respectively:

`\citet{Reilly2007}` produces: Reilly *et al.* (2007)
`\citep{Webster2003}` produces: (Webster *et al.*, 2003)

[1] This is footnote text. This is footnote text.

Example bibliography entries for the various types of references are given below. The full bibliography database can be found in the *template_bibliography.bib* file located in the JP LaTeX template package. Last, the resultant formatted references are given at the end of this document in the references section. Authors should use the example database entry to determine what information is necessary to have a properly formatted reference in JP report style.

- Journal article:

```
@ARTICLE{Bugnion2006,
AUTHOR = {Bugnion, V. and C. Hill and P. H. Stone},
YEAR = {2006},
TITLE = {An Adjoint Analysis of the Meridional Overturning Circulation in a
Hybrid Coupled Model},
JOURNAL = {Journal of Climate},
VOLUME = {19},
NUMBER = {15},
PAGES = {3751-3767}}
```

- Journal article with JP reprint:

```
@REPRINT{Webster2003,
AUTHOR = {Webster, M. D. and C. E. Forest and J. M. Reilly and M. H. Babiker
and D. W. Kicklighter and M. Mayer and R. G. Prinn and M. C. Sarofim
and A. P. Sokolov and P. H. Stone and C. Wang},
YEAR = {2003},
TITLE = {Uncertainty Analysis of Climate Change and Policy Response},
JOURNAL = {Climatic Change},
VOLUME = {61},
NUMBER = {3},
PAGES = {295-320},
INSTITUTION = {MIT JPSPGC},
TYPE = {Reprint 2003-11},
URL = {http://mit.edu/globalchange/www/MITJPSPGC_Reprint03-11.pdf}}
```

- Journal article with JP preprint:

```
@PREPRINT{Babiker2007,
AUTHOR = {Babiker, M. and R. S. Eckaus},
YEAR = {2007},
TITLE = {Unemployment Effects of Climate Policy},
JOURNAL = {Environmental Science and Policy},
NOTE = {in press; see also},
INSTITUTION = {MIT JPSPGC},
TYPE = {Report 137},
URL = {http://mit.edu/globalchange/www/MITJPSPGC_Rpt137.pdf}}
```

- Journal article submitted/in press without a JP preprint, or article in preparation:

```
@UNPUBLISHED{Gao2007,
AUTHOR = {Gao, X. and P. A. Dirmeyer and Z. Guo and M. Zhao},
TITLE = {Sensitivity of Land Surface Simulations to the Treatment of Vegetation
Properties and the Implications for Seasonal Climate Prediction},
YEAR = {2008},
JOURNAL = {Journal of Hydrometeorology},
NOTE = {submitted}}
```

- Technical Report:

```
@TECHREPORT{Paltsev2005,
AUTHOR = {Paltsev, S. and J. Reilly and H. Jacoby and R. Eckaus and
J. McFarland and M. Babiker},
YEAR = {2005},
TITLE = {The MIT Emissions Prediction and Policy Analysis (EPPA) Model:
Version 4},
INSTITUTION = {MIT JPSPGC},
TYPE = {Report 125},
MONTH = {August},
PAGES = {72},
URL = {http://mit.edu/globalchange/www/MITJPSPGC_Rpt125.pdf}}
```

- Technical Note:

```
@TECHREPORT{Gurgel2007b,
AUTHOR = {Gurgel, A. and G. Metcalf and N. Osouf and J. Reilly},
YEAR = {2007b},
TITLE = {Computing Tax Rates for Economic Modeling: A Global Dataset Approach},
INSTITUTION = {MIT JPSPGC},
TYPE = {Technical Note 11},
MONTH = {January},
PAGES = {13},
URL = {http://mit.edu/globalchange/www/MITJPSPGC_TechNote11.pdf}}
```

- Dissertation/Thesis:

```
@THESIS{Sugiyama2007,
AUTHOR = {Sugiyama, M.},
YEAR = {2007},
TITLE = {Estimating the Economic Cost of Sea-Level Rise},
TYPE = {Master of Science Thesis in Technology and Policy},
SCHOOL = {Massachusetts Institute of Technology},
ADDRESS = {Cambridge, MA}}
```

- Book edited:

```
@BOOK{Ellerman2007,
EDITOR = {Ellerman, A.D. and B. Buchner and C. Carraro},
YEAR = {2007},
TITLE = {Allocation in the European Emissions Trading Scheme: Rights, Rents,
and Fairness},
PUBLISHER = {Cambridge University Press},
ADDRESS = {Cambridge, UK},
PAGES = {448}}
```

- Book chapter:

```
@INBOOK{Reilly2007,
AUTHOR = {Reilly, J. and B. Felzer and D. Kickligher and J. Melillo and H. Tian
and M. Asadoorian},
YEAR = {2007},
TITLE = {The Prospects for Biological Carbon Sinks in Greenhouse Gas Emissions
Trading Systems},
BOOKTITLE = {Greenhouse Gas Sinks},
EDITOR = {Reay, D. and C. N. Hewitt and K. Smith and J. Grace},
PUBLISHER = {CABI Publishing},
ADDRESS = {Wallingford, UK},
CHAPTER = {8},
PAGES = {115-142}}
```

- Book Chapter Forthcoming:

```
@INBOOK{Jacoby2007,
AUTHOR = {Jacoby, H.},
YEAR = {2007},
TITLE = {Climate Favela: A Comment on Barrett},
BOOKTITLE = {Architectures for Agreement: Assessing Global Climate Change in
the Post-Kyoto World},
EDITOR = {J. Aldy and R. Stavins},
PUBLISHER = {Cambridge University Press},
ADDRESS = {Cambridge, UK},
NOTE = {forthcoming}}
```

- Conference Preprints/Proceedings/Extended Abstracts:

```
@INPROCEEDINGS{Kim2006,
AUTHOR = {Kim, D. and C. Wang and A. M. Ekman and M. C. Barth and P. J. Rasch},
YEAR = {2006},
TITLE = {Climate Impact of Anthropogenic Aerosols in an Interactive
Size-Resolving Aerosol-Climate Model},
BOOKTITLE = {Eos Trans.},
ORGANIZATION = {AGU},
VOLUME = {87},
NUMBER = {52},
NOTE = {{F}all Meeting Supplement, Abstract A33B-0978}}
```

4.2.9 Appendices

The appendix or appendices should follow the references using the command:

```
\appendix % to start the appendix portion
\appsection{}  % if the appendix does not have a title
\appsection{: Title of the Appendix}  % if the appendix has a title
```

Figures and tables inserted in the appendix will automatically be labeled according to the appendix number.

5. UPDATES FROM LAST VERSION

Version 1.2 of the JP LaTeX template includes the following:

- Corrected the indentation and hang of footnotes and affiliations;
- Corrected the use of "," and "and" in the list of authors on the title page;
- Corrected the justification of captions.

Please contact the authors of this template if you think improvements to this template are necessary.

6. CONCLUSION

This is a nice LaTeX template.

Acknowledgements

The acknowledgments immediately follow the main text. It should be brief and should only acknowledge those who provided direct help in the research and writing of the report. It is also where financial support is acknowledged.

7. REFERENCES

Babiker, M. and R. S. Eckaus, 2007: Unemployment Effects of Climate Policy. *Environmental Science and Policy*, in press; see also MIT JPSPGC *Report 137*. (http://mit.edu/globalchange/www/MITJPSPGC_Rpt137.pdf).

Bugnion, V., C. Hill and P. H. Stone, 2006: An Adjoint Analysis of the Meridional Overturning Circulation in a Hybrid Coupled Model. *Journal of Climate*, **19**(15): 3751–3767.

Ellerman, A., B. Buchner and C. Carraro (eds.), 2007: *Allocation in the European Emissions Trading Scheme: Rights, Rents, and Fairness*. Cambridge University Press: Cambridge, UK, 448 p.

Gao, X., P. A. Dirmeyer, Z. Guo and M. Zhao, 2008: Sensitivity of Land Surface Simulations to the Treatment of Vegetation Properties and the Implications for Seasonal Climate Prediction. *Journal of Hydrometeorology*, submitted.

Gurgel, A., G. Metcalf, N. Osouf and J. Reilly, 2007b: Computing Tax Rates for Economic Modeling: A Global Dataset Approach. MIT JPSPGC *Technical Note 11*, January, 13 p. (http://mit.edu/globalchange/www/MITJPSPGC_TechNote11.pdf).

Jacoby, H., 2007: Climate Favela: A Comment on Barrett. In: *Architectures for Agreement: Assessing Global Climate Change in the Post-Kyoto World*, J. Aldy and R. Stavins, (eds.), Cambridge University Press: Cambridge, UK, forthcoming.

Kim, D., C. Wang, A. M. Ekman, M. C. Barth and P. J. Rasch, 2006: Climate Impact of Anthropogenic Aerosols in an Interactive Size-Resolving Aerosol-Climate Model. *Eos Trans.*, AGU, **87**(52), Fall Meeting Supplement, Abstract A33B-0978.

Paltsev, S., J. Reilly, H. Jacoby, R. Eckaus, J. McFarland and M. Babiker, 2005: The MIT Emissions Prediction and Policy Analysis (EPPA) Model: Version 4. MIT JPSPGC *Report 125*, August, 72 p. (http://mit.edu/globalchange/www/MITJPSPGC_Rpt125.pdf).

Reilly, J., B. Felzer, D. Kickligher, J. Melillo, H. Tian and M. Asadoorian, 2007: The Prospects for Biological Carbon Sinks in Greenhouse Gas Emissions Trading Systems. In: *Greenhouse Gas Sinks*, D. Reay, C. N. Hewitt, K. Smith and J. Grace, (eds.), CABI Publishing: Wallingford, UK, Chapter 8, pp. 115–142.

Sugiyama, M., 2007: *Estimating the Economic Cost of Sea-Level Rise*. Master of Science Thesis in Technology and Policy, Massachusetts Institute of Technology, Cambridge, MA.

Webster, M. D., C. E. Forest, J. M. Reilly, M. H. Babiker, D. W. Kicklighter, M. Mayer, R. G. Prinn, M. C. Sarofim, A. P. Sokolov, P. H. Stone and C. Wang, 2003: Uncertainty Analysis of Climate Change and Policy Response. *Climatic Change*, **61**(3): 295–320; MIT JPSPGC *Reprint 2003-11*, pp. 295–320. (http://mit.edu/globalchange/www/MITJPSPGC_Reprint03-11.pdf).

APPENDIX A: Greenhouse Gamble Wheels

This is the appendix A.

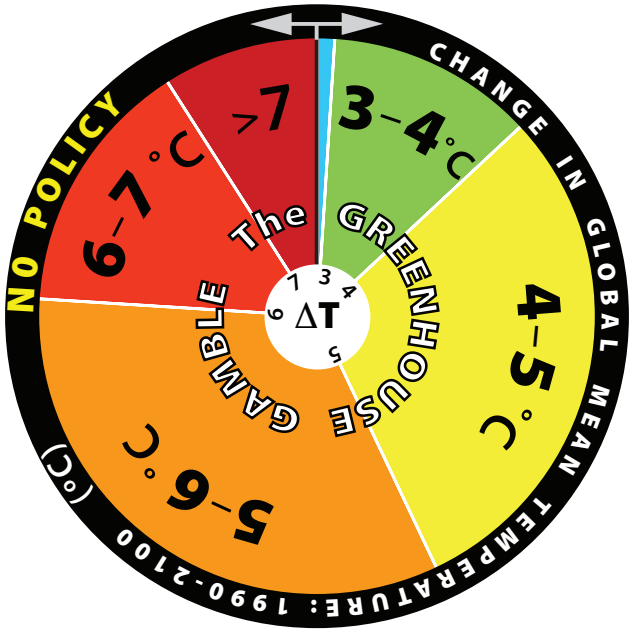

Figure A1. The MIT JP Greenhouse Gamble wheel for the reference case (no policy).

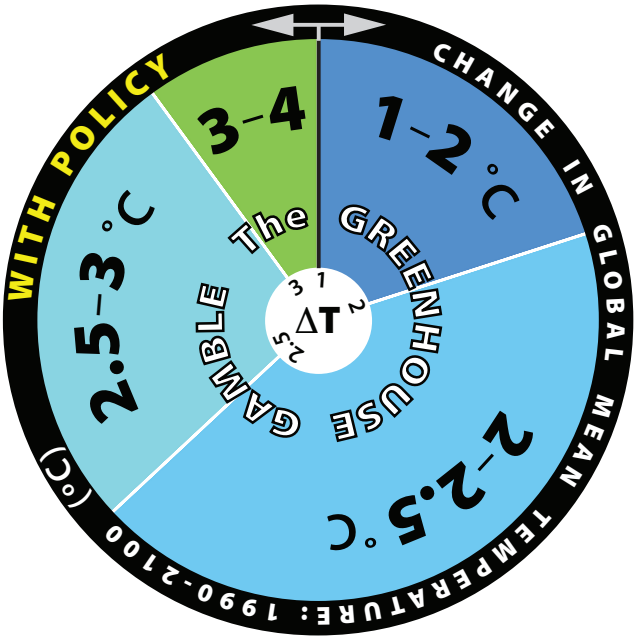

Figure A2. The MIT JP Greenhouse Gamble wheel for the policy case (550 ppm CO_2).

APPENDIX B

This is the appendix B.

Table B1. Equilibrium Variables Related to Electricity in Top-down Model.

Activity variables	
$\mathrm{ELE}_r^{\mathrm{NF}}$	Electricity generation from technology NF in r
$\mathrm{ELE}_r^{\mathrm{F}}$	Electricity generation from fossil fuels in r
$\mathrm{ELE}_r^{\mathrm{NF}}$	Electricity generation from technology NF in r
D_r^{ELE}	Demand for electricity in r
S_r^i , D_r^i	Supply and demand for commodity i in non-electricity sectors in r
L_r , D_r^{L}	Labor supply and demand in non-electricity sectors in r
K_r , D_r^{K}	Capital supply and demand in non-electricity sectors in r
S_r^{FUEL} , D_r^{FUEL}	Fossil fuel supply and demand in non-electricity sectors in r
S_r^{NF}	Supply of technology-specific resource in r
Price variables	
P_r^{ELE}	Price index for electricity generation in r
P_r^{NF}	Price index for technology-specific resource NF in r
P^{K}	Rental price for capital
P_r^{L}	Wage rate in r
P_r^{FUEL}	Price index for fossil fuel FUEL in r
P_r^i	Price index non-energy commodity i in r

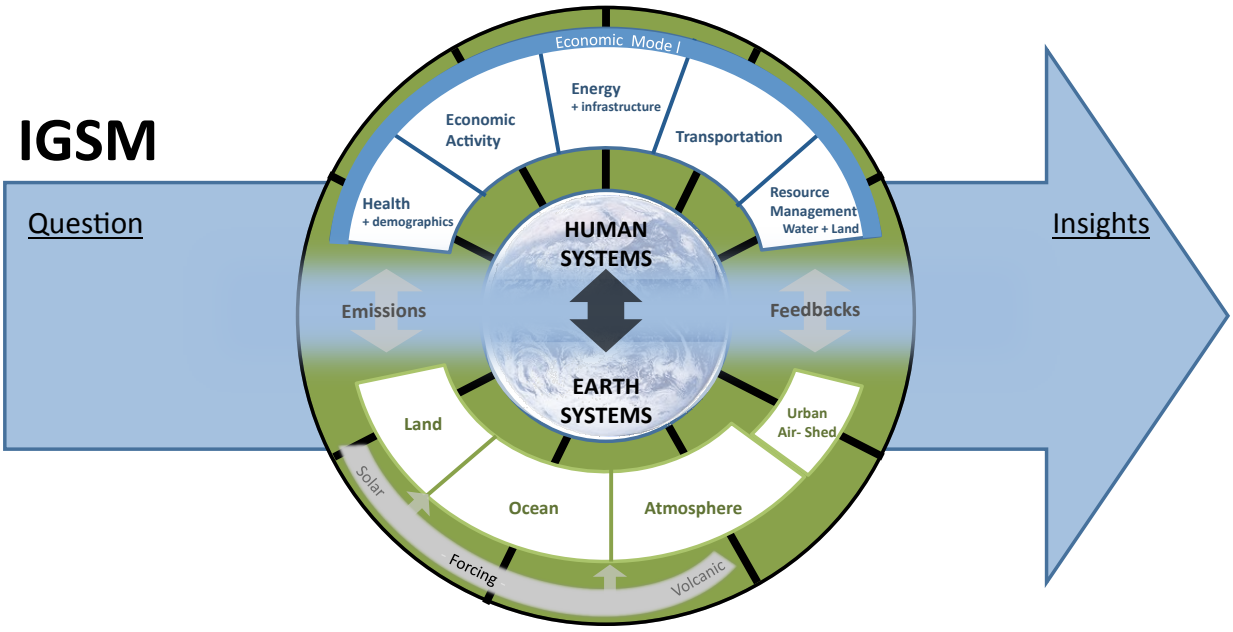

Figure B1. Schematic of the MIT Integrated Global System Model framework.